AGENDA
Mansfield Conservation Commission
Wednesday, July 20, 2011
Audrey P. Beck Building
CONFERENCE ROOM B
7:30 PM

1. **Call to Order**

2. **Roll Call**

3. **Opportunity for Public Comment**

4. **Minutes**
   a. May 18, 2011 (June meeting cancelled)

5. **New Business**
   a. IWA Referrals: W1482 - United Services, Inc. - N. Frontage Rd - office building
      W1483 - Cumberland Farms, Inc. - Storrs Rd/Middle Tpk - Convenience Store/Gas Station
      W1484 - Kouatly - 98 Fern Road - 1 Lot Resubdivision
      W1485 - Bell - 552 Bassetts Bridge Rd - New Barn & Barn Addition
   b. Other

6. **Continuing Business**
   a. Protecting Dark Skies in the Last Green Valley
   b. Water Source Study for the Four Corners Area/Environmental Impact Evaluation (EIE)
   c. Swan Lake Discharge Mirror Lake Dredging and other UConn Drainage Issues
      - GZA GeoEnvironmental - re: Mirror Lake dredging updated technical information
   d. UConn Agronomy Farm Irrigation Project
   e. Eagleville Brook Impervious Surface TMDL Project
      - 6/1/11 Final Draft
   f. UConn Hazardous Waste Transfer Station
   g. Ponde Place Student Housing Project
   h. CL&P "Interstate Reliability Project" (application to State DPUC expected to be submitted in 2011)
   i. Other

7. **Communications**
   a. Minutes
      ☐ Open Space (6/21/11) ☐ PZC (6/6/11, 6/20/11 & 7/5/11) ☐ IWA (6/6/11 &7/5/11)
   b. Inland Wetlands Agent Monthly Activity Report
   c. 6/30/11 Memo from Director of Planning
      Re: Storrs Center Zoning Permit for Post Office & Post Office Road
   d. Other

8. **Other**

9. **Future Agendas**

10. **Adjournment**

PAGE
BREAK

APPLICATION FOR PERMIT
MANSFIELD INLAND WETLANDS AGENCY
4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268
TEL: 860-429-3334 OR 429-3330
FAX: 860-429-6863

FOR OFFICE USE ONLY

File # W 1482
Fee Paid $185
Official Date of Receipt 6-29-11

Applicants are referred to the Mansfield Inland Wetlands and Watercourses Regulations for complete requirements, and are obligated to follow them. For assistance, please contact Grant Meitzler, Inland Wetlands Agent at the telephone numbers above.

Please print or type or use similar format for computer; attach additional pages as necessary.

Part A - Applicant

Name UNITED SERVICES, INC.

Mailing Address 1007 NORTH MAIN STREET, P.O. BOX 839

DAYVILLE, CT Zip 06241-0839

Telephone-Home 860-774-2020 Telephone-Business 860-774-2020

Title and Brief Description of Project

"PROPOSED OFFICE BUILDING"

REFER TO "STATEMENT OF USE" FOR DESCRIPTION

Location of Project NORTH FRONTAGE ROAD (38.101.2-1 & 38.101.6-1)

Intended Start Date FALL 2011

Part B - Property Owner (if applicant is the owner, just write "same")

Name KEVIN TUBRIDY

Mailing Address 25 LEDGEBROOK DRIVE

MANSFIELD, CT Zip 06250

Telephone-Home 860-974-2995 Telephone-Business 860-423-0334

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature _____ date 6/27/11

Applicant's interest in the land: (if other than owner) FUTURE OWNER

Part C - Project Description (attach extra pages, if necessary)

1) Describe in detail the proposed activity here or on an attached page. (**See guidelines at end of application – page 6.**)
Please include a description of all activity or construction or disturbance:

a) ***in*** the wetland/watercourse
b) ***in*** the area ***adjacent*** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is ***off*** your property

1) REFER TO THE "PROJECT DESCRIPTION" ATTACHED.

2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

a) ***in*** the wetland/watercourse
b) ***in*** the area ***adjacent*** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property

a) 0 S.F. DISTURBANCE IN THE WETLAND.
b) 43150 S.F. DISTURBANCE WITHIN 150 FEET FROM THE WETLAND EDGE.

3) Describe the type of materials you are using for the project: AVAILABLE ONSITE SOIL, IMPORTED PROCESSED STONE, CONCRETE CURBS, ASPHALT PAVEMENT, CONCRETE SLABS, TIMBER GUIDE RAIL, PVC VINYL FENCE, SPLIT RAIL FENCE.

a) include ***type*** of material used as fill or to be excavated ONSITE SOL AND IMPORTED STONE
b) include ***volume*** of material to be filled or excavated APPROXIMATELY 18,000 CY OF EARTHWORK IS NECESSARY. THERE WILL BE NO EXPORTING OF MATERIALS.

4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).
A DETAILED PLAN FOR SEDIMENTATION AND EROSION CONTROL CONFORMING WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL WILL BE IMPLIMENTED FOR CONSTRUCTION.

Part D - Site Description

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)
THE EXISTING SITE IS MOSTLY WOODED AND SLOPES FROM SOUTH TO NORTH AND CONSISTS MOSTLY OF WELL DRAINED SOILS.

Part E - Alternatives

Have you considered any alternatives to your proposal that would meet your needs and might have less impact on the wetland/watercourse? Please list these alternatives.

THIS PROPOSAL IMPLIMENTS MANY BEST MANAGEMENT PRACTICES AND NUMEROUS STORMWATER INFILTRATION SYSTEMS TO MINIMIZE IMPACTS TO THE EXISTING WETLANDS. NO WORK IS PROPOSED INSIDE THE WETLANDS. SIMILARLY, THERE IS NO PROPOSED WORK WITHIN THE FLOOD ZONE.

Part F - Map/Site Plan (all applications)

1) Attach to the application a map or site plan showing **existing conditions** and the **proposed project** in relation to wetland/ watercourses. Scale of map or site plan should be 1" = 40'; if this is not possible, please indicate the scale that you are using. A sketch map may be sufficient for small, minor projects. **(See guidelines at end of application – page 6.)**

2) Applicant's map date and date of last revision JUNE 27, 2011

3) Zone Classification PLANNED BUSINESS 1

4) Is your property in a flood zone? X Yes _____ No _____ Don't Know

Part G - Major Applications Requiring Full Review and a Public Hearing

See Section 6 of the Mansfield Regulations for additional requirements.

Part H - Notice to Abutting Property Owners

1) List the names and addresses of abutting property owners

Name Address

REFER TO ATTACHED "TOWN OF MANSFIELD - ABUTTERS LIST"

2) **Written Notice to Abutters** . You must notify abutting property owners by certified mail, return receipt requested, stating that a wetland application is in progress, and that abutters may contact the Mansfield Inland Wetlands Agent for more information. Include a brief description of your project. ***Postal receipts of your notice to abutters must accompany your application.*** (This is not needed for exemptions).

Part I - Additional Notices, if necessary

1) Notice to Windham Water Works is attached. If this application is in the public watershed for the Windham Water Works (WWW), you must notify the WWW of your project within 7 days of sending the application to Mansfield–sending it by certified mail, return receipt requested. Contact the Mansfield Inland Wetlands Agent to find out if you are in this watershed.

2) Notice to Adjoining Town. If your property is within 500 feet of an adjoining town, you must also send a copy of the application, on the same day you sent one to Mansfield, to

the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.

3) The Statewide Reporting Form (attached) shall be part of the application and specified parts must be completed and returned with this application.

Part J - Other Impacts To Adjoining Towns, if applicable

1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site?___Yes_X_No___Don't Know

2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality?____ Yes _X_ No ____ Don't Know

3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality?____ Yes ____X No ____Don't Know

Part K - Additional Information from the Applicant

Set forth (or attach) any other information which would assist the Agency in evaluating your application. (*Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)*

Part L - Filing Fee

Submit the appropriate filing fee. (Consult Wetlands Agent for the fee schedule available in the Mansfield Inland Wetlands and Watercourses Regulations.)

___$1,000. ___ $750. ___$500. ___$250. _X_ $125. ____$100. ___$50. ___$25.

_X_ $60 State DEP Fee

Note: The Agency may require you to provide additional information about the regulated area which is the subject of the application, or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.

The undersigned applicant hereby consents to necessary and proper inspections of the above mentioned property by members and agents of the Inland Wetlands Agency, at reasonable times, both before and after the permit in question has been granted by the Agency.

Applicant's Signature _____ Date 28 June 2011

Geoffrey P. Fitzgerald (as Agent for United Soc.)

Project Description
North Frontage Road
Mansfield, CT

The proposed activities include construction of an office building with associated parking driveway, drainage, utilities and appurtenances. The new parking lot is +/- 64' at the closest point to the wetland line with associated site grading +/- 52' to the closest point to the wetlands line. The proposed development footprint is approximately 3.5 acres on the 6.025 acre property. There are not proposed activities within the wetlands. Approximately 1 acre of area is disturbed outside the wetland but within the 150' upland review area. Approximately 18,000 CY of earthwork is necessary to prepare the site for this development. Excavated soil will be reused onsite. Processed gravel will be imported as pavement and building bases.

Construction vehicles and machinery capable of conducting the proposed earthwork and development will be used onsite. Construction is anticipated to start in the Fall of 2011 and complete in the Spring of 2012. The wetlands will be protected using sedimentation and erosion control devices such as geotextile silt fence, hay bales, silt sacks in catch basins and other measures consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. We do not have any knowledge of any previous wetland application for this property.

Statement of Use
North Frontage Road
Mansfield, CT

United Services, Inc. is proposing to develop a two-story professional office building of approximately 28,000 SF to consolidate existing operations in the Windham area. The building would be built on approximately 6 acres at the junction of North Frontage Road and Mansfield City Road. The site development is located within a wetland 150-foot upland review area and therefore is also under jurisdiction of the Mansfield Inland Wetland Agency. An Application for Permit is being submitted concurrently to the Inland Wetland Agency.

United Services would move its present outpatient operations from locations on Mansfield Avenue in Willimantic and Route 6 in Columbia to this site, as well as incorporating several smaller office sites throughout the area. At the time of occupancy, approximately 80 professional and support staff will have their offices at this location. The staff would include Psychiatrists, Primary Care Physicians, Advanced Practice Registered Nurses, Clinical Social Workers, Licensed Professional Counselors, Case Managers, Family Support workers, Vocational Counselors, Prevention and Early Intervention staff, as well as the clerical and secretarial supports necessary. The building as designed could accommodate more than 100 staff without additions, but is also designed for future expansion if necessary.

United Services programs operating from this location would include the Enhanced Care Clinic, which provides outpatient care for behavioral health issues for all ages. These services include emergency, urgent and routine evaluation, as well as individual, family and group treatment. Community and Family Education would also be provided. In home supports for individuals and families would also be based here, with staff travelling to community sites to deliver services. In addition, we anticipate that we will include Primary Care services for clients who have difficulty in accessing such care from existing services, particularly due to psychiatric disabilities.

Licensed office hours at the site would be Monday through Thursday, 9 am to 8 pm, and Friday 9 am to 5 pm. Staff may access the building during other hours for support activities not including direct outpatient services. Many clients use public transportation to come to appointments; others use medical taxis or private vehicles.

United Services has experienced a more than 100 percent increase in the number of clients served and services delivered in our adult clinic since 2007, and our child and family services have grown more than 40 percent. We are developing this office space to be able to meet increased community need and changing models of healthcare delivery that include rapid response, community based as well as office based services and professional levels of care integrated with natural community supports. We have provided these services for more than 47 years in the Windham/Mansfield area, and are excited to continue to grow to meet our neighbors' needs.

APPLICATION FOR PERMIT
MANSFIELD INLAND WETLANDS AGENCY
4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268
TEL: 860-429-3334 OR 429-3330
FAX: 860-429-6863

FOR OFFICE USE ONLY

File # W 1483
Fee Paid 3,310-
Official Date of Receipt 7-12-11

Part A – Applicant

Name Cumberland Farms, Inc.

Mailing Address c/o Joseph P. Williams, Esq., Shipman & Goodwin LLP,

One Constitution Plaza, Hartford, CT Zip 06103-1919

Telephone-Home n/a Telephone-Business 860-251-5127

Title and Brief Description of Project

Cumberland Farms gas station and convenience store.

Location of Project 643 Middle Turnpike and 1660 Storrs Road, intersection of Routes 44/195/320.

Intended Start Date Fall 2011

Part B – Property Owner (if applicant is the owner, just write "same")

Name See Property Owners of Record attached hereto as Exhibit A.

Mailing Address

Zip

Telephone-Home Telephone-Business

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature See letter consenting to this application attached hereto as Exhibit B. date

Applicant's interest in the land: (if other than owner) Optionee

Part C – Project Description (attach extra pages, if necessary)

1) Describe in detail the proposed activity here or on an attached page. **(See guidelines at end of application – page 6.)**
Please include a description of all activity or construction or disturbance:

a) ***in*** the wetland/watercourse
b) ***in*** the area adjacent to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is off your property

a) No work proposed in wetlands.

b) Wetland A U.R.A. – Construction of small amount of concrete sidewalk but primarily earthwork related to construction of a bioretention area to provide stormwater quality treatment for site stormwater prior to release to Wetland A.

Wetland B U.RA. – Construction of bituminous concrete parking areas, concrete sidewalks and proposed convenience store building as well as associated utility trenching and installation. Though the extent of proposed disturbance is greater within the Wetland B 150' upland review area, no stormwater from the site is tributary to this wetland.

2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

a) ***in*** the wetland/watercourse
b) ***in*** the area adjacent to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is off your property

a) None.
b) Wetland A U.R.A. = 0.1 acre ; Wetland B U.R.A.= 0.7 acre. Please note that a small part of the altered area within the Wetland A U.R.A. and a larger part of the altered area within the Wetland B U.R.A. will be altered by removing existing pavement to replace it with vegetated surfaces.

3) Describe the type of materials you are using for the project: Bituminous and Portland cement concrete curbs and pavements, sand, gravel, crushed stone, HDPE and PVC pipe, wood frame building.

a) include ***type*** of material used as fill or to be excavated on-site material.
b) include ***volume*** of material to be filled or excavated sitework goal is to balance on-site cut and fill.

4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).

Project will utilize temporary erosion control measures such as silt fence, inlet protection, and construction entrances as well as permanent control measures such as riprap and a bioretention area to provide stormwater quality treatment for runoff from the majority of site impervious surfaces.

Part D – Site Description

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)
The majority of the site adjacent to US 44 and CT 195 is intensely developed with wooded areas surrounding the impervious areas on the northern and eastern boundaries of the site.

Part E – Alternatives

Have you considered any alternatives to your proposal that would meet your needs and might have less impact on the wetland/watercourse? Please list these alternatives.
The proposed activities are expected to have no adverse impacts on the off-site wetlands.

Part F – Map/Site Plan (all applications)

1) Attach to the application a map or site plan showing **existing conditions** and the **proposed project** in relation to wetland/ watercourses. Scale of map or site plan should be 1" = 40'; if this is not possible, please indicate the scale that you are using. A sketch map may be sufficient for small, minor projects. **(See guidelines at end of application – page 6.)**

2) Applicant's map date and date of last revision 07/11/2011
3) Zone Classification Planned Business 3
4) Is your property in a flood zone? _____ Yes _____X No _____ Don't Know

Part G – Major Applications Requiring Full Review and a Public Hearing

See Section 6 of the Mansfield Regulations for additional requirements.

Part H – Notice to Abutting Property Owners

1) List the names and addresses of abutting property owners

Name Address
See Exhibit C attached hereto.

2) **Written Notice to Abutters.** You must notify abutting property owners by certified mail, return receipt requested, stating that a wetland application is in progress, and that abutters may contact the Mansfield Inland Wetlands Agent for more information. Include a brief description of your project. ***Postal receipts of your notice to abutters must accompany your application.*** (This is not needed for exemptions).

Part I – Additional Notices, if necessary

1) Notice to Windham Water Works is attached. If this application is in the public watershed for the Windham Water Works (WWW), you must notify the WWW of your project within 7 days of sending the application to Mansfield--sending it by certified mail, return receipt requested. Contact the Mansfield Inland Wetlands Agent to find out if you are in this watershed.

2) Notice to Adjoining Town. If your property is within 500 feet of an adjoining town, you must also send a copy of the application, on the same day you sent one to Mansfield, to

the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.

3) The Statewide Reporting Form (attached) shall be part of the application and specified parts must be completed and returned with this application.

Part J – Other Impacts To Adjoining Towns, if applicable

1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site?___Yes__X_No___Don't Know

2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality?___Yes_X_No___Don't Know

3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality?___Yes_X__No___Don't Know

Part K – Additional Information from the Applicant

Set forth (or attach) any other information which would assist the Agency in evaluating your application. *(Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)*

Part L – Filing Fee

Submit the appropriate filing fee. (Consult Wetlands Agent for the fee schedule available in the Mansfield Inland Wetlands and Watercourses Regulations.)

___$1,000. ___$750. ___$500. __X $250. ___$125. ___$100. ___$50. ___$25.

_X__$60 State DEP Fee

Note: The Agency may require you to provide additional information about the regulated area which is the subject of the application, or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.

The undersigned applicant hereby consents to necessary and proper inspections of the above mentioned property by members and agents of the Inland Wetlands Agency, at reasonable times, both before and after the permit in question has been granted by the Agency.

Joseph P. Williams _____ July 12, 2011

Applicant's Signature Date

STATEMENT OF USE FOR SPECIAL PERMIT AND SITE PLAN APPLICATIONS

Cumberland Farms, Inc.
643 Middle Turnpike and 1660 Storrs Road
(Routes 44/195/320), Mansfield, CT

July 12, 2011

Cumberland Farms, Inc. proposes to merge and redevelop the two parcels located at 643 Middle Turnpike and 1660 Storrs Road (northeast corner of the intersection of Routes 44/195/320) in the Storrs section of Mansfield as a combined site with a new convenience store and four multi-product gasoline dispensers. The combined property totals 2.62 acres and is located in the Planned Business 3 (PB-3) zone. Currently abandoned and dilapidated, the properties formerly were operated as the Kathy-Johns restaurant and Republic Oil gas station.

The proposed use consists of: a 3,634 square foot convenience store building; gasoline filling station with four multi-product dispensers and canopy; parking area with 22 striped spaces; two 20,000-gallon underground storage tanks; exterior garbage collection area; and landscaped buffer along Routes 44 and 195. The proposed use complies with the permitted use provisions of the Mansfield Zoning Regulations, as set forth in Article Seven, Section N.2.a.1 and N.2.h.2; will be less intense than the longstanding prior use of the parcels as a gas station and restaurant; and is compatible with the Mansfield Plan of Conservation and Development (2006).

In 1990, the Mansfield Planning and Zoning Commission granted a special permit to Republic Oil Co., Inc. to construct a gasoline service station and convenience store on the 1660 Storrs Road parcel.[1] The Mansfield Zoning Board of Appeals that year granted a variance allowing the gasoline pump canopy to be built 20 feet from the front property line. The parcel at 643 Middle Turnpike for many years was operated as the "Kathy-Johns" restaurant. The existing, combined 2.62-acre site has 1.6 acres of impervious coverage, or 61 percent of the site.

The proposed plan will substantially reduce the total site coverage to 30.7 percent (0.8 acre). The plan removes the two existing restaurant and convenience store buildings and replaces them with a single convenience store, thereby reducing the building coverage from 6.2 percent to 5.6 percent. The front and side yards setbacks to the store building and to the

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[1] If the current special permit application is granted, Cumberland Farms requests that the Commission declare the 1990 special permit void for clarity of the land records.

canopy will increase substantially in the proposed plan.[2] The plan maintains the existing natural vegetation along the northwestern, northern and eastern boundaries of the property, and it adds a generous landscaped buffer at the southwestern corner of the property as well as landscaped islands within the parking area and at the northern edge of the parking area. The paved parking and travel area is also being greatly reduced in the proposed plan; 22 striped parking spaces are provided, consistent with Article Ten, Section D.5.O of the Zoning Regulations.

Access to the site will be better controlled by reducing the multiple existing curb cuts to just two entrance/exit areas, one each at Route 195 and Route 44. CHA is currently preparing a traffic study that will be submitted to the Commission shortly.

Cumberland Farms expects to hire three full time employees and 10 part-time employees for its new convenience store. Among other things, the store will offer items such as fruit, breakfast offerings, pizza, roller grill items, and heated fresh sandwiches upon demand. A selection of hot, cold and frozen beverages will also be provided. The store will be operated on a 24-hour basis.

The proposed facility will use the existing on-site septic system and potable water supply well. We expect the usage of these systems to be much less than the amounts the restaurant used. Stormwater management and renovation are discussed in the plan set and in the drainage report filed herewith. The stormwater system provides for a bio-retention area in the northwestern corner of the site that will be planted with wetlands plants.

There are off-site inland wetlands areas adjacent to the northern and southeastern boundaries of the site. The plan proposes regulated activities within the upland review areas for each of these wetlands. We are therefore filing, simultaneously with the zoning applications, an application for permit to conduct regulated activities with the Mansfield Inland Wetlands Agency.

[2] Given that the PB-3 zone is a Design Development District, the Commission is empowered, under Article Ten, Section A.4.d of the Zoning Regulations, to determine the setback requirements for buildings and site improvements on this site.

APPLICATION FOR PERMIT
MANSFIELD INLAND WETLANDS AGENCY
4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268
TEL: 860-429-3334 OR 429-3330
FAX: 860-429-6863

FOR OFFICE USE ONLY

File # W 1484
Fee Paid $310-
Official Date of Receipt 7-14-11

Applicants are referred to the Mansfield Inland Wetlands and Watercourses Regulations for complete requirements, and are obligated to follow them. For assistance, please contact Grant Meitzler, Inland Wetlands Agent at the telephone numbers above.

Please print or type or use similar format for computer; attach additional pages as necessary.

Part A - Applicant

Name M. Youssef T. Kouatly & Ann M. Kouatly

Mailing Address 98 Fern Rd.

Mansfield, CT Zip 06288

Telephone-Home 860-423-2975 Telephone-Business _____

Title and Brief Description of Project

2 Lot Resubdivision

Location of Project 98 Fern Road

Intended Start Date September 2011

Part B - Property Owner (if applicant is the owner, just write "same")

Name SAME

Mailing Address _____

_____ Zip _____

Telephone-Home _____ Telephone-Business _____

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature _____ date _____

Applicant's interest in the land: (if other than owner) _____

Part C - Project Description (attach extra pages, if necessary)

1) Describe in detail the proposed activity here or on an attached page. (**See guidelines at end of application – page 6.**)
Please include a description of all activity or construction or disturbance:

a) ***in*** the wetland/watercourse

b) ***in*** the area ***adjacent*** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is ***off*** your property

The activity proposed is the development of a single family house within the area adjacent to an offsite wetland. The closest point of the activity to the wetland is 60ft. The area of disturbance is primarily a grass field with a few trees. A portion of the proposed activity drains towards the wetland. Standard construction practices and equipment will be used. It is expected that the work will be completed between September 2011 and April 2012. The off-site wetland will be protected from disturbance damage by silt fence installed as shown on the proposed Resubdivision plan. There is no knowledge of a previous wetlands application on this property.

2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

a) ***in*** the wetland/watercourse

b) ***in*** the area ***adjacent*** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property

There will be no disturbance in the wetland. There will be 0.67 acres of disturbance in the area adjacent to the off-site wetland.

3) Describe the type of materials you are using for the project: Standard residential construction materials, common fill, select septic sand processed gravel, crushed stone, concrete etc.

a) include ***type*** of material used as fill or to be excavated Common Fill, Sand, Gravel

b) include ***volume*** of material to be filled or excavated 400 cubic yards

4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).

Silt fence will be used to minimize or avoid any adverse impacts on the wetland and adjacent regulated area.

Part D - Site Description

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)

The general character of the land is moderately drained soils with open grass areas and woods with gentle slopes.

Part E - Alternatives

Have you considered any alternatives to your proposal that would meet your needs and might have less impact on the wetland/watercourse? Please list these alternatives.

Other locations were considered for the proposed activities. The proposed design was chosen because it has the least amount of impact on the wetlands.

Part F - Map/Site Plan (all applications)

1) Attach to the application a map or site plan showing **existing conditions** and the **proposed project** in relation to wetland/ watercourses. Scale of map or site plan should be 1" = 40'; if this is not possible, please indicate the scale that you are using. A sketch map may be sufficient for small, minor projects. **(See guidelines at end of application – page 6.)**

2) Applicant's map date and date of last revision 7/12/11

3) Zone Classification RAR 90

4) Is your property in a flood zone? _____Yes ✓ No _____ Don't Know

Part G - Major Applications Requiring Full Review and a Public Hearing

See Section 6 of the Mansfield Regulations for additional requirements.

Part H - Notice to Abutting Property Owners

1) List the names and addresses of abutting property owners

Name Address

See Attached List

2) **Written Notice to Abutters** . You must notify abutting property owners by certified mail, return receipt requested, stating that a wetland application is in progress, and that abutters may contact the Mansfield Inland Wetlands Agent for more information. Include a brief description of your project. ***Postal receipts of your notice to abutters must accompany your application.*** (This is not needed for exemptions).

Part I - Additional Notices, if necessary

1) Notice to Windham Water Works is attached. If this application is in the public watershed for the Windham Water Works (WWW), you must notify the WWW of your project within 7 days of sending the application to Mansfield--sending it by certified mail, return receipt requested. Contact the Mansfield Inland Wetlands Agent to find out if you are in this watershed.

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the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.

3) The Statewide Reporting Form (attached) shall be part of the application and specified parts must be completed and returned with this application.

Part J - Other Impacts To Adjoining Towns, if applicable

1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site?___Yes ✓ No ___Don't Know

2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality?____ Yes ✓ No ____ Don't Know

3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality?____ Yes ✓ No ____Don't Know

Part K - Additional Information from the Applicant

Set forth (or attach) any other information which would assist the Agency in evaluating your application. (*Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)*

Part L - Filing Fee

Submit the appropriate filing fee. (Consult Wetlands Agent for the fee schedule available in the Mansfield Inland Wetlands and Watercourses Regulations.)

___$1,000. ___ $750. ___$500. ___$250. ___$125. ____$100. ___$50. ___$25.

___ $60 State DEP Fee

Note: The Agency may require you to provide additional information about the regulated area which is the subject of the application, or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.

The undersigned applicant hereby consents to necessary and proper inspections of the above mentioned property by members and agents of the Inland Wetlands Agency, at reasonable times, both before and after the permit in question has been granted by the Agency.

[signature] Applicant's Signature

July 12, 2011 Date

APPLICATION FOR PERMIT
MANSFIELD INLAND WETLANDS AGENCY
4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268
TEL: 860-429-3334 OR 429-3330
FAX: 860-429-6863

FOR OFFICE USE ONLY

File # W 1485
Fee Paid $185-
Official Date of Receipt 7-1-11

Applicants are referred to the Mansfield Inland Wetlands and Watercourses Regulations for complete requirements, and are obligated to follow them. For assistance, please contact Grant Meitzler, Inland Wetlands Agent at the telephone numbers above.

Please print or type or use similar format for computer; attach additional pages as necessary.

Part A - Applicant

Name James Wesley Bell and Jean E. Bell

Mailing Address 552 Bassetts Bridge Road

Mansfield, CT Zip 06250

Telephone-Home 860-455-0545 Telephone-Business 860-455-0545

Title and Brief Description of Project

The Gardens AT Bassetts Bridge Farm: The Gardens is a farm/nursery seeking approval for wedding

Location of Project 552 Bassetts Bridge Road

Intended Start Date Spring 2012

Part B - Property Owner (if applicant is the owner, just write "same")

Name

Mailing Address SAME

Zip

Telephone-Home Telephone-Business

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature date

Applicant's interest in the land: (if other than owner)

Part C - Project Description (attach extra pages, if necessary)

1) Describe in detail the proposed activity here or on an attached page. (**See guidelines at end of application – page 6.**)
Please include a description of all activity or construction or disturbance:

a) ***in*** the wetland/watercourse

b) ***in*** the area ***adjacent*** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is ***off*** your property

See Attached

2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

a) ***in*** the wetland/watercourse

b) ***in*** the area ***adjacent*** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property

Restroon Addition : approximately 9'x24' = 216 sq'
Kitchen Addition : approximately 10'x20' = 200 sq'
New Agricultural Barn : 14' X 48' = 672 sq'
Pergola Extension : 12' X 60' = 720 sq'

3) Describe the type of materials you are using for the project: cement foundation with wood construction

a) include ***type*** of material used as fill or to be excavated gravel / dirt

b) include ***volume*** of material to be filled or excavated The sum of the square feet of excavation is 1,808

4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).

Will use staked hay bales around Construction

Part D - Site Description

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)

Flat and well drained

Part E - Alternatives

Have you considered any alternatives to your proposal that would meet your needs and might have less impact on the wetland/watercourse? Please list these alternatives.

We have considered port-a-pots and food cart. However, port-a-pot is very unappealing to a wedding party and a food cart will not be approved by local health without a septic system

Part F - Map/Site Plan (all applications)

1) Attach to the application a map or site plan showing **existing conditions** and the **proposed project** in relation to wetland/ watercourses. Scale of map or site plan should be 1" = 40'; if this is not possible, please indicate the scale that you are using. A sketch map may be sufficient for small, minor projects. **(See guidelines at end of application – page 6.)**

2) Applicant's map date and date of last revision May 2011
3) Zone Classification RAR 90
4) Is your property in a flood zone? ____Yes ✓ No ____ Don't Know

Part G - Major Applications Requiring Full Review and a Public Hearing

See Section 6 of the Mansfield Regulations for additional requirements.

Part H - Notice to Abutting Property Owners

1) List the names and addresses of abutting property owners

Name	Address
• Dam Property	Bassetts Bridge Road
• Lynette and Daniel Civco	544 Bassetts Bridge Road
• Roger and Tina Abell	606 " " "
• Tina Popelesti Christina Popelesti	502 Bassetts Bridge Rd
• Lori and Jay Smith	580 Bassetts Bridge Rd
• Robert and Dianne Wyss	538 " " "
• Allen and Darlene Riguier	13 Bates Road N. Windham 06256

2) **Written Notice to Abutters** . You must notify abutting property owners by certified mail, return receipt requested, stating that a wetland application is in progress, and that abutters may contact the Mansfield Inland Wetlands Agent for more information. Include a brief description of your project. ***Postal receipts of your notice to abutters must accompany your application.*** (This is not needed for exemptions).

Part I - Additional Notices, if necessary

1) Notice to Windham Water Works is attached. If this application is in the public watershed for the Windham Water Works (WWW), you must notify the WWW of your project within 7 days of sending the application to Mansfield--sending it by certified mail, return receipt requested. Contact the Mansfield Inland Wetlands Agent to find out if you are in this watershed.

2) Notice to Adjoining Town. If your property is within 500 feet of an adjoining town, you must also send a copy of the application, on the same day you sent one to Mansfield, to

the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.

3) The Statewide Reporting Form (attached) shall be part of the application and specified parts must be completed and returned with this application.

Part J - Other Impacts To Adjoining Towns, if applicable

1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site? ✓ Yes ___ No ___ Don't Know

2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality? ____ Yes ✓ No ____ Don't Know

3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality? ____ Yes ✓ No ____ Don't Know

Part K - Additional Information from the Applicant

Set forth (or attach) any other information which would assist the Agency in evaluating your application. (*Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)*

Part L - Filing Fee

Submit the appropriate filing fee. (Consult Wetlands Agent for the fee schedule available in the Mansfield Inland Wetlands and Watercourses Regulations.)

___ $1,000. ___ $750. ___ $500. ___ $250. ✓ $125. ____ $100. ___ $50. ___ $25.

✓ $60 State DEP Fee

Note: The Agency may require you to provide additional information about the regulated area which is the subject of the application, or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.

The undersigned applicant hereby consents to necessary and proper inspections of the above mentioned property by members and agents of the Inland Wetlands Agency, at reasonable times, both before and after the permit in question has been granted by the Agency.

Jean E. Bell — 7/13/11

Applicant's Signature — Date

APPLICATION FOR PERMIT
MANSFIELD INLAND WETLNADS AGENCY

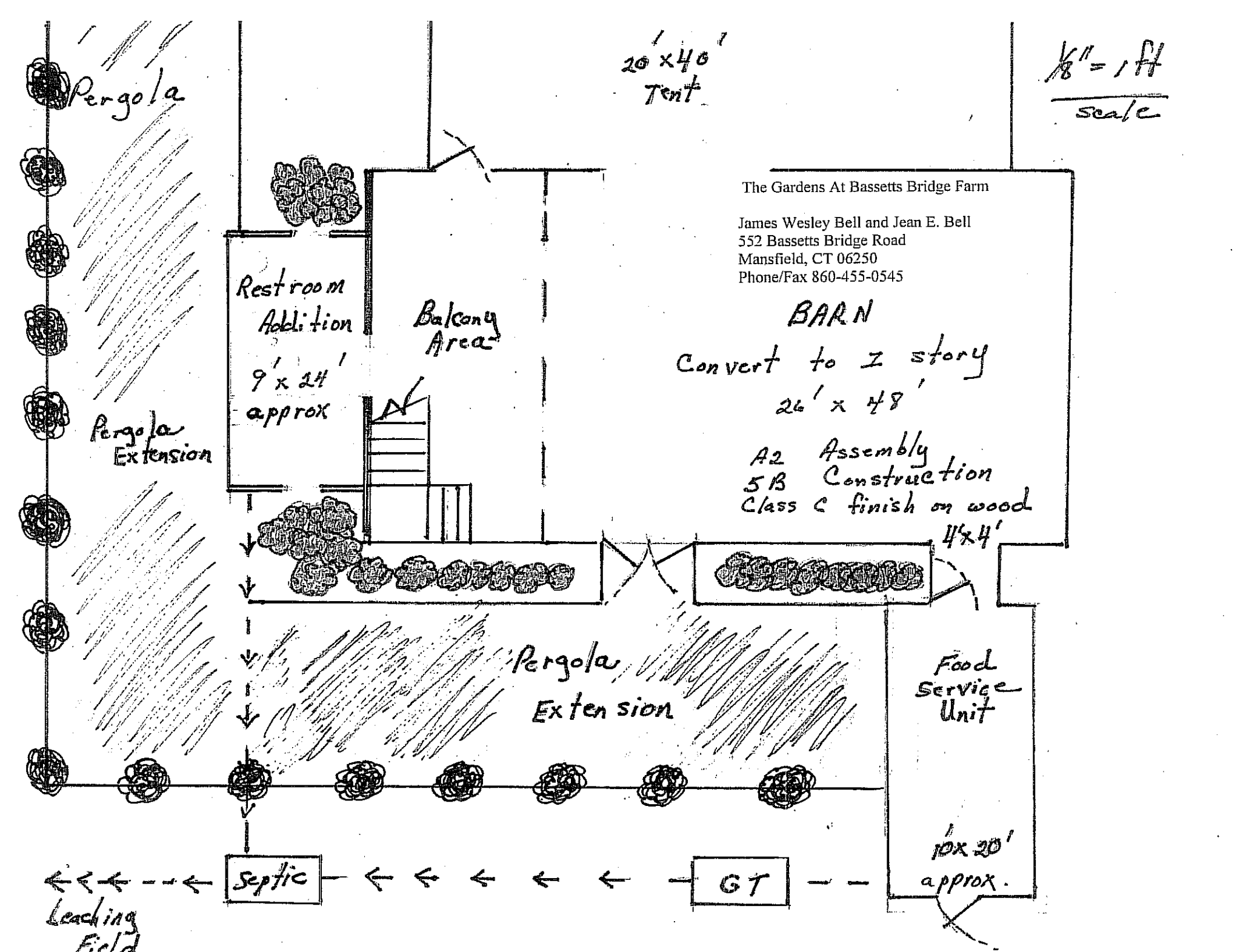
Applicants: James Wesley Bell and Jean E. Bell
The Gardens At Bassetts Bridge Farm
552 Bassetts Bridge Road
Mansfield, Connecticut 06250

Part C – Project Description: On August 2, 2004, The Mansfield Planning and Zoning Commission granted the applicants a special permit for an agricultural and recreational garden center located on their property at 552 Bassetts Bridge Road. It is now the intent of the applicants to seek additional approval as a wedding venue. To accomplish this, several changes and additions need to be made to the garden center. All changes and additions are within 150ft of wetlands, ***but no change or addition is in the wetlands.***

Proposed changes and additions include the following:

- Within 150ft of wetlands

1. Convert the exiting 2-story barn to a 1-story barn.
2. Add an addition onto the side of the existing barn to accommodate handicap accessible restrooms.
3. Add an addition onto the back of the existing barn to accommodate space for a caterer. Both restroom addition and kitchen addition will be supported by a 48" frost wall foundation.
4. Expand the existing pergola to wrap around the side and back of the existing barn. Since the pergola is constructed of 8"x 8" oak beams the pergola will also have a 48" frost wall foundation. The area under the pergola will be finished in cement.
5. Construct a 14ft x 48ft 1-story barn parallel to the existing greenhouse to accommodate storage of agricultural tools and equipment, and to provide a check out area for garden center customers. The new barn will be supported by a 48" frost wall foundation and finished with a cement floor.
6. Install a septic system that will accommodate the restroom and kitchen additions onto the existing barn. Specifications for this septic system are noted on the attached plot plan


Pergola
20' x 40'
Tent
1/8" = 1 ft
scale
The Gardens At Bassetts Bridge Farm
James Wesley Bell and Jean E. Bell
552 Bassetts Bridge Road
Mansfield, CT 06250
Phone/Fax 860-455-0545
Restroom Addition
9' x 24'
approx
Balcony Area
BARN
Convert to 1 story
26' x 48'
A2 Assembly
5B Construction
Class C finish on wood
4'x4'
Pergola Extension
Pergola Extension
Food Service Unit
10' x 20'
approx.
Septic
GT
Leaching Field

Town of Mansfield, CT

PAGE
BREAK

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

June 7, 2011
File No. 15.0166134.00

Mr. Ken Major
CT Department of Environmental Protection
Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division
79 Elm Street
Hartford, CT 06106

RE: Mirror Lake Dredging
Flocculent Impact Evaluation
Wastewater Discharge Permit
Application No. 200903959

ONE FINANCIAL PLAZA
1350 Main Street
Suite 1400
Springfield
Massachusetts 01103
413-726-2100
Fax: 413-732-1249
www.gza.com

Dear Mr. Major:

On behalf of The University of Connecticut, GZA GeoEnvironmental, Inc. (GZA) is submitting additional information regarding the use of a polymer flocculent in the sediment dewatering process for the Mirror Lake Dredging project, as proposed in the NPDES Permit Application for Wastewater Discharges for the proposed Mirror Lake hydraulic dredging project on the University of Connecticut Storrs Campus.

The CT Department of Public Health (DPH) provided comments to the Department of Environmental Protection (DEP) on UConn's Permit Application for Wastewater Discharges with two (2) letters, one on December 17, 2010 and another on March 1, 2011. Because Mirror Lake is within the watershed of a public drinking water supply (Willimantic Reservoir), the DPH Drinking Water Section, after consulting with Windham Water Works, a public water utility, recommended that the proponent use a flocculent which is already certified by NSF (formerly known as the National Sanitation Foundation) for use in drinking water applications. Alternatively, should the proponent use a flocculent that is not NSF-certified, DPH requested that information be provided that demonstrates no negative impact to the public drinking water supply with use of such a flocculent. The purpose of this letter is to provide that information.

According to the Ashland Hercules Water Technologies (Ashland), the flocculent manufacturer, the concentration of residual acrylamide is the sole concern of NSF in certifying a flocculent used in the treatment of drinking water. While NSF requires that residual acrylamide content not exceed 5×10^{-4} ppm, our analysis predicts that the residual acrylamide will be reduced to $7 \pm \times 10^{-5}$ ppm by the time it reaches the Willimantic Reservoir, the downstream public water supply source. This concentration meets the NSF criterion for certification of substances used in drinking water treatment applications.

SELECTION OF PROPOSED FLOCCULENT

Mirror Lake water and soft sediment samples were collected to run bench scale processing tests using geotextile fabric dewatering tubes. The tests were performed in the labs of Mineral Processing Services, LLC (MPS) of South Portland, Maine in July and August 2010, to simulate the

larger scale dredging, dewatering, and discharge process proposed for the Mirror Lake Dredging project. Characterization of the dredged material was made for consolidation and dewatering properties and for the determination of a suitable polymer flocculant. Laboratory testing of the chemical and toxicological characteristics of the simulated dewatering discharge (filtrate) was performed by Connecticut-certified laboratories to assess the discharge from the dredging and dewatering process. Results of laboratory testing have been previously submitted to DEP as supplementary information for the permit application.

The flocculent determined to provide the most efficient removal of suspended solids from the dredge discharge is the DrewFloc 2421 made by Ashland. This flocculent is a non-NSF approved flocculent in that it is not certified for use in drinking water applications. While taking care not to reveal proprietary information about DrewFloc 2421, Ashland has stated that the product contains no constituents listed in the DEP Water Quality Standards or the EPA National Primary Drinking Water Regulations, with the exception of acrylamide (see Attachment 3).

IMPACT EVALUATION

The criterion of concern for NSF certification of a polymer flocculent used in the treatment of drinking water is the residual monomer content as established by the U.S. Environmental Protection Agency (EPA) through the National Primary Drinking Water Regulations. Acrylamide is a monomer used in the production of polyacrylamide flocculents. Polymer flocculents applied to drinking water systems must contain <0.05% acrylamide (monomer) at a polymer dosage rate of 1 mg/L or Parts per Million (ppm). DrewFloc 2421, while not NSF-certified, has all of the exact same components in the formulation that NSF-certified Ashland polymer flocculents contain, with the exception of monomer content. The residual monomer quality control specification for DrewFloc 2421 is <0.1% residual monomer as opposed to the NSF standard of <0.05%. EPA has recognized that improvements have occurred in the polymerization processes that have reduced the monomer content in most polymers from 5% to 0.3%[1]. Ashland maintains a higher standard for the DrewFloc 2421 at <0.1% monomer content. This standard is very close to the EPA/NSF level.

Initial Discharge Concentration

The EPA/NSF acrylamide content limit to polymer flocculent dosage translates to an application concentration of 0.0005 ppm (0.05% of 1 ppm). Assuming no degradation or removal of monomer in the drinking water treatment process, it is assumed that the limit applies to residual monomer concentration at the end use (the tap). This is a conservative assumption.

Introduction and initiation of the dilution of DrewFloc 2421 and its residual monomer will occur at Mirror Lake, 10± miles along waterways upstream of the Windham Waterworks drinking water treatment plant intake on the Willimantic Reservoir in Mansfield Center. The bench testing process determined that the dewatering process for the dredged sediments from Mirror Lake will require a dosage of 400 ppm of DrewFloc 2421 flocculent containing 0.1% acrylamide. This

[1] U.S. Environmental Protection Agency, Technical Factsheet on: Acrylamide, excerpt from the National Primary Drinking Water Regulations.

translates to a concentration of 0.4 ppm (0.1% of 400 ppm) being applied to the dredge discharge entering the dewatering process.

Applying the same conservative assumption as that for the drinking water treatment process, no degradation or removal of monomer in the dewatering process is presumed to occur, therefore, the dewatering process return water discharge to Mirror Lake will be assumed to contain the same concentration of 0.4 ppm acrylamide applied to the dredge discharge entering the dewatering system.

Mirror Lake Discharge Concentration

The concentration of residual acrylamide exiting Mirror Lake was estimated by applying a mass balance for a well-mixed lake[2], under the assumption that Mirror Lake would be sufficiently well mixed for a uniform distribution of residual acrylamide. Note, the inflow into the lake used in the mass balance equation was estimated using USGS Connecticut StreamStats. The interval of July to October was used to compute the flow rate that is exceeded 50% of the time, as this flow interval is expected to represent average conditions during the driest time of the year when the potential for dilution is lowest, thus computing a conservatively high residual acrylamide concentration. Calculations are described in detail in Attachment 2.

The mass balance analysis indicates that the concentration of residual acrylamide exiting Mirror Lake is reduced by approximately 33% from 0.4 ppm to ±0.299 ppm, due to dilution and biodegradation.

Roberts Brook Discharge Concentration

Flow from Mirror Lake enters Roberts Brook, which flows for approximately 1.7 miles before joining the Fenton River. The watershed to Roberts Brook, at a point just upstream of where Roberts Brook enters the Fenton River, results in a July to October flow rate exceeded 50% of the time in Roberts Brook of 0.18 cfs, according to USGS Connecticut StreamStats. Any reduction in residual acrylamide concentration along Roberts Brook due to biodegradation or dispersion was neglected. Calculations are described in detail in Attachment 2.

The mass balance analysis for Roberts Brook upstream of the Fenton River estimates that the acrylamide concentration is diluted from 0.4 ppm to ±0.037 ppm.

Fenton River Discharge Concentrations

Dilution of the residual acrylamide concentration where Roberts Brook enters the Fenton River was accounted for by applying a basic mass balance assuming complete mixing at the confluence.

[2] Chapra, Steven C. (1997) Surface Water Quality Modeling, McGraw-Hill, Boston, Massachusetts.

From the mass balance analyses of the tributary confluences along the Fenton River, the concentration of residual acrylamide entering Mansfield Hollow Lake from the Fenton River is estimated to be ±0.003 ppm.

As was done for Mirror Lake, the mass balance for a well-mixed lake was then applied to Mansfield Hollow Lake to estimate the residual acrylamide concentration exiting Mansfield Hollow Lake. The volume of Mansfield Hollow Lake was estimated from the Lake Bathymetry GIS datalayer from the Connecticut Department of Environmental Protection (2003). The outflow from Mansfield Hollow Lake was taken from the daily outflow data for the Mansfield Hollow Lake Dam, available on the U.S. Army Corps of Engineers website for Mansfield Hollow Lake. The data from June to October, 2010 were plotted to estimate the typical low flow of 30± cfs during that period (see Attachment 2, Figure 2).

The mass balance analysis indicates that the concentration of residual acrylamide exiting Mansfield Hollow Lake is reduced by approximately 98% from 0.003± ppm to 7± x 10^{-5}ppm, due to dilution and biodegradation.

ESTIMATED IMPACT RESULTS

Mass balance analysis indicates that residual acrylamide discharged from the dredge dewatering process at Mirror Lake will be reduced to 7± x 10^{-5} ppm by the time it is discharged over the Mansfield Hollow Lake Dam, a 99.98% concentration reduction. Analyses of the final reach through the Natchaug River and the Willimantic Reservoir to the Windham Waterworks treatment plant intake were not performed and it is anticipated that the concentration would be further diluted and degraded. The analysis utilizes low-flow conditions developed from USGS Connecticut StreamStats and from existing USGS and USACE gage data that represent the flow conditions expected during a summer period when the Mirror Lake dredging is proposed to take place. Low-flow conditions provide the least potential for dilution and, therefore, represent the probable worst case scenario for the fate of residual acrylamide as it travels downstream from Mirror Lake.

The analysis approach is relatively conservative. Not all inputs and parameters were evaluated including additional contributing areas of runoff within the Fenton River watershed not associated with tributary streams and including the travel path distance and travel time. Additional evaluation to incorporate these elements and more details would indicate even further reduction in the concentration of residual acrylamide in the environment as it travels between Mirror Lake and the Windham Waterworks treatment plant.

It is important to recognize that, while Mirror Lake does reside within the Windham Waterworks water supply watershed, the proposed activity is very distantly removed from the treatment plant intake. The EPA/NSF requirement limiting content of residual acrylamide in flocculents, as

mandated by the EPA National Primary Drinking Water Standards, is concerned with their use in drinking water treatment. The proposed flocculent for the dredging of Mirror Lake is in almost every way the same as the NSF-approved flocculents, with the exception of the residual monomer content. This evaluation demonstrates that residual monomer introduced into Mirror Lake during the temporary activity of hydraulic dredging will be reduced to trace concentrations of $7\pm \times 10^{-5}$ ppm, several orders of magnitude less than the EPA standard of 5×10^{-4} ppm, therefore, GZA concludes that the proposed activity will have no negative impact on the public water supply at the Windham Waterworks drinking water treatment plant intake.

We appreciate your review of this evaluation of the flocculent proposed for use in dewatering sediment dredged from Mirror Lake and hope that the information provided allows DEP to seek acceptance of the proposed activity from DPH with respect to the public drinking water supply.

Please feel free to contact our office should you have questions or require additional information.

Sincerely,
GZA GeoEnvironmental, Inc.

Nathaniel Y. Arai, P.E.
Project Manager

Thomas E. Jenkins, P.E.
Consultant Reviewer

Harry R. Jones, P.E.
Principal in Charge

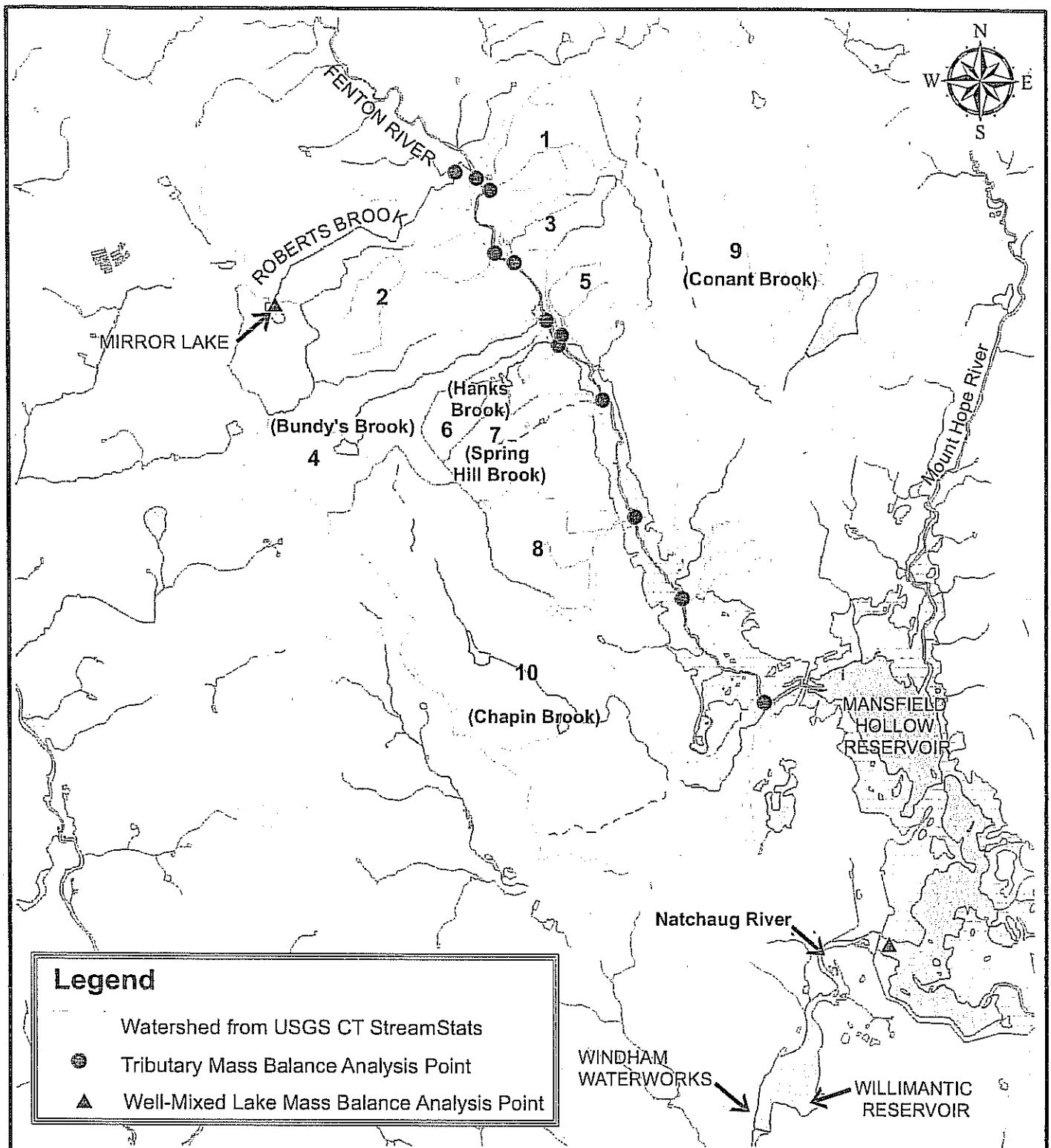
Attachments:

1 Figure 1 – Locus Map
2 Calculations and Tables
3 Ashland Product Statement

cc: Jason Coite – University of Connecticut
Pat Bisacky – Connecticut Department of Public Health
Gregory Padick – Director of Planning, Town of Mansfield
James Hooper – Superintendent, Windham Waterworks
Robert Miller – Director, Eastern Highlands Health District

ATTACHMENT 1

FIGURE 1 – LOCUS MAP



LOCUS MAP

Mirror Lake Dredging
University of Connecticut
Storrs, Connecticut

Project No:	15.0166134.00
Drawn by:	ATR
Checked by:	RTS
Date:	MAY 2011
Figure No:	1

GZA GeoEnvironmental, Inc.
Springfield, MA / Hartford, CT

Data obtained from University of Connecticut Map and Geographic Information Center and Connecticut Environmental Conditions Online (CT ECO).

ATTACHMENT 2

CALCULATIONS AND TABLES

Mirror Lake Discharge Concentration

The mass balance for a well-mixed lake can be expressed as (Chapra, 1997):

$$Accumulation = loading - outflow - reaction - settling \quad (1)$$

When settling is neglected, this equation becomes:

$$V\frac{dc}{dt} = \sum(Q_{in}\ c_{in}) - \sum(Q_{out}\ c_{out}) - kVc \quad (2)$$

Where:

V = lake volume,
c = in-lake concentration,
$\frac{dc}{dt}$ = change in concentration over time,
Q = volumetric flow rate of all water sources entering or leaving the system,
c_{in} = inflow concentration,
c_{out} = outflow concentration = c for a well-mixed lake, and
k = first order reaction coefficient (T^{-1}).

Assuming that the system is at steady state, $\frac{dc}{dt}$ becomes zero and the equation may be solved for the in-lake concentration, c, as:

$$c = \frac{\sum(Q_{in}c_{in})}{\sum(Q_{out})+kV} \quad (3)$$

This equation assumes:

1. A constant lake volume as the average of the pre-dredging lake volume and the post-dredging lake volume.
2. A constant flow rate ($Q_{in} = Q_{out}$).
3. The inflow (Q_{in}) to the lake consists the return flow from the Geotubes and contribution from the watershed.
4. Return flow can be as high as 2,000 gallons per minute (gpm), but will discharge to the geotextile tube dewatering system at an average rate of 1,500 gpm or 3.34 cubic feet per second (cfs) operating over a 12 hour operating day. The dewatered sediments captured in the geotextile tubes will retain some water which, in total, will reduce the return water flow by approximately 15% to a rate of about 2.84 cfs.
5. The watershed contribution to Mirror Lake estimated using USGS Connecticut StreamStats. The July to October flow rate exceeded 50% of the time. This flow is expected to represent average conditions during the driest time of the year, when the potential for dilution is lowest.
1. All inputs (loadings) are instantaneously distributed throughout the volume.

The input parameters for the computation of the residual acrylamide concentration in Mirror Lake are summarized in Table 1.

Table 1. Mirror Lake Mass Balance Input Parameters and Result

Mirror Lake Mass Balance Input Parameter	Value	Source
Mirror Lake Volume, V (million gallons)		
Pre-dredging volume	4.2	1
Post-dredging volume	7.7	
Average volume	6.0	
First Order Reaction Coefficient, k (day^{-1})	4.7×10^{-2}	2
Inflow Flow Rate, Q_{in} (cubic feet per second)		
Inflow from watershed	0.02	3
Inflow from Geotubes	2.84	4
Outflow Flow Rate, Q_{out} (cubic feet per second)		
Outflow to Roberts Brook	0.02	3
Outflow to Geotubes	3.34	4
Inflow Concentration, c_{in} (parts per million)		
From Geotubes	0.4	5
From watershed	0	
Resulting Mirror Lake Residual Acrylamide Concentration		

1: From bathymetric survey information, July 2009, BEC, Inc.

2: First order reaction coefficient for biodegradation of acrylamide in surface water from the *European Union Risk Assessment Report for acrylamide*, Institute for Health and Consumer Protection, European Chemicals Bureau, Existing Substances, European Commission Joint Research Centre, CAS No: 79-06-1, EINECS No: 201-173-7, 1st Priority List, Volume: 24.

3: USGS Connecticut StreamStats, StreamStats Ungaged Site Report, "D50_07_10": July to October flow exceeded 50% of the time, May 6, 2011.

4: Dredge discharge anticipated average daily (12 hour) flow rate is estimated at 1.08 mgd (3.34 cfs) or 25% of maximum daily flow of 1.44 mgd

5: Approximately 15% of water will be retained within the dewatered sediments effectively reducing the return water discharge rate to 981,000 mgd (2.84 cfs).

Roberts Brook Discharge Concentration

Dilution of the residual acrylamide concentration in Roberts Brook due to added flow from the watershed was accounted for by applying a mass balance at the downstream end of Roberts Brook, as follows:

$$Q_{Mirror\ Lake} \times C_{Mirror\ Lake} + Q_{watershed} \times C_{watershed} = Q_{Roberts\ Brook} \times C_{Roberts\ Brook} \quad (4)$$

$$Q_{Roberts\ Brook} = Q_{Mirror\ Lake} + Q_{watershed} \quad (5)$$

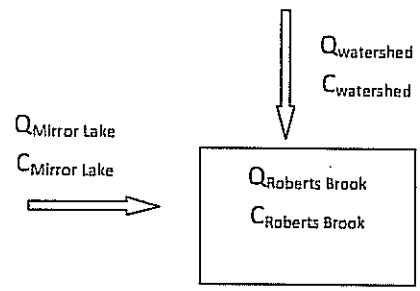


Table 2. Roberts Brook Mass Balance Analysis

Roberts Brook Mass Balance Input Parameter	Value	Source
Flow rate from Mirror Lake, $Q_{Mirror\ Lake}$ (cubic feet per second)	0.02	1
Residual Acrylamide Concentration from Mirror Lake, $C_{Mirror\ Lake}$ (parts per million)	0.299	2
Flow rate from Roberts Brook Watershed, $Q_{watershed}$ (cubic feet per second)	0.16	1
Residual Acrylamide Concentration from Roberts Brook Watershed, $C_{Roberts\ Brook}$ (parts per million)	0	-
Resulting Roberts Brook Residual Acrylamide Concentration		
$C_{RobertsBrook}$ (parts per million)		0.037

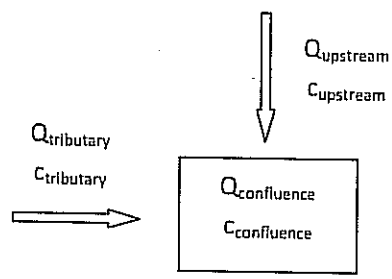
1: USGS Connecticut StreamStats, StreamStats Ungaged Site Report, "D50_07_10": July to October flow exceeded 50% of the time, May 6, 2011.
2: Mirror Lake mass balance analysis (Table 1).

Fenton River Discharge Concentrations

Dilution of the residual acrylamide concentration where Roberts Brook enters the Fenton River was accounted for by applying a basic mass balance with complete mixing at the confluence, as follows:

$$Q_{upstream} \times C_{upstream} + Q_{tributary} \times C_{tributary} = Q_{confluence} \times C_{confluence} \quad (6)$$

$$Q_{confluence} = Q_{upstream} + Q_{tributary} \quad (7)$$



The flow on the Fenton River was estimated as the annual seven-day minimum for Water Years 2006-2008 from the *USGS Water-Data Report 2008 for Gage 01121330 Fenton River at Mansfield, Connecticut.* A similar mass balance was applied at each location along the Fenton River where a tributary enters the Fenton River as it travels downstream to Mansfield Hollow Lake. The mass balance analysis was performed at a total of ten confluences in addition to the Roberts Brook/Fenton River confluence. Some very small tributaries were neglected. The flows for each tributary were taken as the July to October flow exceeded 50% of the time, as computed by USGS Connecticut StreamStats. The mass balance computations are summarized in Table 3.

Table 3. Tributary Mass Balance Analyses

	Flow, cfs			Concentration, ppm		
Tributary	$Q_{upstream}$	$Q_{tributary}$	$Q_{confluence}$	$C_{upstream}$	$C_{tributary}$	$C_{confluence}$
Roberts Brook	0.32	0.18	0.50	0.000	0.037	0.013
1 (unnamed)	0.50	0.09	0.59	0.013	0.000	0.011
2 (unnamed)	0.59	0.11	0.70	0.011	0.000	0.010
3 (unnamed)	0.70	0.03	0.73	0.010	0.000	0.009
4 (Bundy's Brook)	0.73	0.16	0.89	0.009	0.000	0.008
5 (unnamed)	0.89	0.09	0.98	0.008	0.000	0.007
6 (Hanks Brook)	0.98	0.04	1.02	0.007	0.000	0.007
7 (Spring Hill Brook)	1.02	0.06	1.08	0.007	0.000	0.006
8 (unnamed)	1.08	0.08	1.16	0.006	0.000	0.006
9 (Conant Brook)	1.16	0.79	1.95	0.006	0.000	0.003
10 (Chapin Brook)	1.95	0.62	2.57	0.003	0.000	0.003

Jessie L. Shea

From: Thomas, Eric [Eric.Thomas@ct.gov]
Sent: Friday, July 08, 2011 12:28 PM
To: Lon R. Hultgren; PlanZoneDept
Cc: Quentin Kessel; Thomas, Eric
Subject: Eagleville Brook Watershed Based Plan - final draft
Attachments: Eagleville Brook WMP-06-01-11.pdf; WBP checklist_Eagleville.doc

Good afternoon –

Please see attached. One document is the actual Plan, while the second document is a short checklist that we and others use to focus in on specific components and their locations within the Plan.

Feel free to distribute this final Plan draft within the Town of Mansfield. I welcome comments from the local watershed community over the next couple of weeks. I have sent a similar message to the regional Willimantic River Alliance. I know that Town staff have had ongoing discussions with the Plan's authors for quite a while. I believe Mike Dietz has said that the Town as well as UConn folks have submitted comments to an initial draft document. Still, I understand the timing is not ideal with many having summer vacation plans.

DEEP and the University of Connecticut will be wrapping up our contractual agreement on this Section 319 NPS funded project by the end of August. There will be opportunities for continued dialogue and further priority setting in the coming months. In the near term, I will be asking Mike Dietz of CLEAR to offer a local presentation and discussion of the Plan. If there is interest and need, perhaps we can develop a watershed tour in the fall. As you may know, there are a lot of exciting steps being already taken to move towards implementing some recommendations, while others need more dialogue and consensus on whether and how to proceed with available resources.

Eric Thomas
Watershed Manager
Bureau of Water Protection and Land Reuse
CT Department of Energy and Environmental Protection (DEEP)
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Watershed Management Plan Component Checklist
for CWA Grant Funding*
Acknowledgment

I/we, the undersigned, believe that the watershed plan addresses Elements "a-i" of the EPA approved watershed based plan model elements - particularly those elements pertaining to broadly estimating pollutant load reductions that may result from implementation of best management practices - as presented in the, "*Nonpoint Source Program and Grants Guidelines for States and Territories.* Federal Register. October 23, 2003. (Volume 68, Number 205. pp. 60658-60660). http://www.epa.gov/fedrgstr/EPA-WATER/2003/October/Day-23/w26755.htm

I/we acknowledge that information provided by this checklist is based on a dynamic watershed based plan. Certain components of the 9 element watershed based plan (and this checklist) may need to be updated as data and information improves.

The signatory(ies) below are under no obligation to partially or fully fund or implement a watershed based plan, or any part thereof, unless funded by an EPA/CT-DEP approved Section 319 grant in accordance with an approved Section 319 workplan.

This checklist is submitted for CWA Section 319/CT-DEP Nonpoint Source Program grant program purposes by:

_____ _____

Signature/Title Date

_____ _____

Signature/Title Date

*This CWA Grant Funding Source includes, but is not limited to, CWA Section 319 grant funding.

9 Element Watershed Based Plan Component Checklist for CWA Grant Funding[1]
Watershed Management Plan Title: Eagleville Brook Watershed Management Plan
Waterbody ID, Hydrologic Unit Code, Watershed Boundary Data Set, or Hydrologic Response Unit: CT 3100-19_01, CT 3100-19_02
River Basin: Thames
County(ies): Tolland
Title of TMDL: a) A TMDL for This Watershed is ("X" as applicable): (X) Approved ( ) In Draft b) No TMDL Has Been Developed to Date: ( )
Comments:

[1]In order to be eligible for CWA Section 319 incremental* grant (watershed protection) funding - or to submit a Section 319 grant proposal - a copy of the EPA approved 9 element watershed based plan and this completed checklist must be on file with the Connecticut Department of Environmental Protection's Bureau of Water Protection and Land Reuse. Components and formatting of this checklist may change in response to federal grant funding, grant guideline revisions, or other program initiatives or purposes as deemed appropriate by EPA/CT-DEP. Note that preparation or submittal of an EPA 9 Element watershed based plan, or this checklist, does not obligate the EPA or CT DEP to partially or fully fund any part of a watershed based plan or recommended implementation project.

* Incremental grant background: Congress enacted Section 319 of the Clean Water Act in 1987, establishing a national program to control nonpoint sources of water pollution. During the last several years EPA has been working with the States to strengthen its support for watershed-based environmental protection by encouraging
local stakeholders to work together to develop and implement watershed-based plans appropriate for the particular conditions found within their communities. In particular, EPA and the States have focused attention on waterbodies listed by States as impaired under Section 303(d) of the Clean Water Act. Toward this end States must use $100 million ($1 million for Connecticut) of Section 319 funds (referred to as "incremental funds") to develop watershed-based plans that address nonpoint source impairments in watersheds that contain Section 303(d)-listed waters and implement recommendations incorporated in these plans.

Component (A) Identification of Pollutant Causes and Sources	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I. The plan identifies the pollutant *causes* and *sources* or groups of similar sources that will need to be managed to achieve the load reductions identified in this watershed based plan or a TMDL, including page number where load reductions are found in this plan.) Comments:	X		"Sources of pollution that need to be controlled"	7

Component (B) Pollutant Load Reduction Estimates	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I. The plan provides estimates of load reductions needed to delist water bodies identified in the watershed based plan. This is a requirement of the Watershed Based Plan. Comments:	X		"Load reductions needed"	7
II. The plan provides *estimates* of potential load reductions for each pollutant cause or source, or groups of similar sources that need to be managed. (If "No" or "N/A" provide comments below.) Comments:	X		"Load reductions needed", and Table 1	7, 10
III. A model (as outlined in Attachment B.IV.) is used to *estimate* pollutant load reductions (assumptions and limitations should be stated). Comments:			n/a	

Component (C) Best Management Practices	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I. The plan provides locations where *potential* BMPs may be implemented. Comments	X		Appendix B	35
II. The plan identifies *potential* BMPs to be installed in "critical" areas. Comments: This is a requirement of the Watershed Based Plan	X		Appendix B	35

Component (D) Financial and Technical Assistance	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I: The plan provides estimates of the financial and technical assistance that will be needed to implement the plan. This is a requirement of the Watershed Based Plan. Comments: This section will include BOTH estimates and potential funding sources for project implementation costs AND Annual maintenance costs of the project.	X		"Technical and financial assistance needed"	19
II: The plan identifies sources and authorities that will be relied upon to implement the plan. Comments:	X		Table 2 "Technical and financial assistance needed"	16 19

Component (E) Education and Outreach	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I. The plan provides an information/education component that will enhance public understanding of the plan and encourage their early and continued participation in project development. Note: This education and outreach component must link the information to model demonstration or pilot projects that stakeholders can implement post WBP development.	X		"Education/outreach"	19

Component (F) Plan Implementation Schedule	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I. The plan provides a schedule for implementing management measures. (Applicant should base implementation timetable on BMPs in "Component C" above.) Comments:	X		"Implementation schedule, milestones, and evaluation criteria" Table 2	15 16

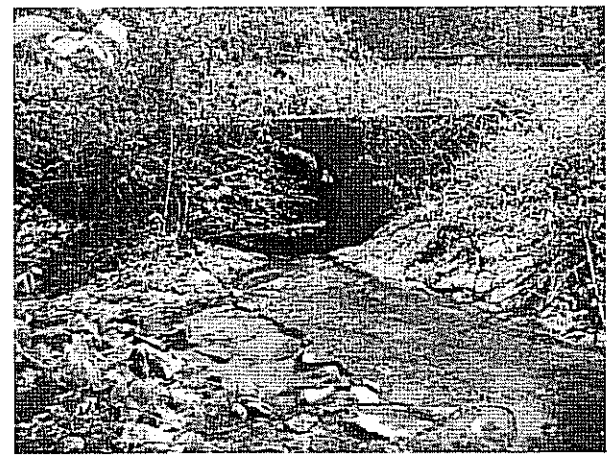
Component (G) Interim Milestones	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I. The plan provides a list or description of interim milestones for determining whether NPS management measures are being implemented.	X		Table 2	16

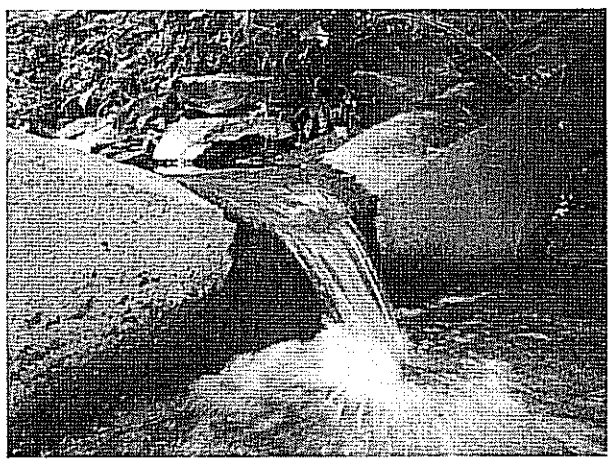
Component (H) Monitoring and Assessment	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I. A set of criteria that can be used to determine whether loading reductions are being achieved over time and progress is being made towards attaining water quality standards. Comments:	X		"Monitoring"	16

Component (I) Plan Implementation Effectiveness	Yes	No	Chapter, Section, Table, List, etc.	Page No.(s)
I. A monitoring component to evaluate the effectiveness of the implementation efforts over time measured against the criteria established under item (H). Comments: The WBP must note that revisions will be made to improve the effectiveness of implementation efforts if monitoring shows no improvement post BMP efforts.	X		"Measuring progress"	18

Eagleville Brook

Watershed Management Plan





June 2011

Prepared by:

Michael E. Dietz
Chester Arnold
Center for Land Use Education and Research
University of Connecticut Cooperative Extension

Contents

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Executive Summary

This Watershed Based Plan comprises the response of the University of Connecticut and the Town of Mansfield, CT to the 2007 Eagleville Brook Total Maximum Daily Load (TMDL) analysis – the first of its kind in the country to be based not on a specific pollutant or pollutants, but on impervious cover.

The emphasis of the Plan is to reduce the amount and impact of *effective* (connected) impervious cover, replacing it where possible (i.e., porous parking lots, green roofs), disconnecting it from the manmade Eagleville drainage network (i.e., rain gardens, bioretention, green streets practices), and treating it where necessary (i.e., gravel wetlands and other water quality practices).

The Plan includes the results of a detailed watershed characterization and field surveys to identify low impact development (LID) retrofit opportunities, informed by the input of a wide group of stakeholders with strong representation from the three main project partners of CT DEP, UConn, and the Town. Watershed characterization is based on an analysis that began with the foundational research of CT DEP, expanded and enhanced that research using high resolution imagery and local data sets, and further refined the data via field work. Field surveys were conducted by teams from UConn CLEAR, the Center for Watershed Protection and the Horsley Witten group, with participation from CT DEP and UConn Office of Environmental Policy staff. The surveys identified 110 retrofit opportunities at 51 sites, almost exclusively on campus where the majority of the impervious cover is located. The information on each of these sites is included in the Appendices. Stakeholder input was received from stakeholder group meetings, and from frequent interaction with key offices and personnel from the three partners.

This Plan emphasizes LID practices for new development and retrofits for redevelopment in the upper (campus) portion of the watershed, and changes to land use regulations and practices in the lower (Town) portion of the watershed. Both of these initiatives are underway, and considerable progress has been made already (see Appendices). The consensus approach is a pragmatic one that emphasizes seizing opportunities as they arise during ongoing University and Town operations, rather than a strict timetable of particular projects at specific points in time. However, a framework has been created based on identified high priority projects; more detail on these projects is provided in concept papers and conceptual technical drawings, both of which are included in the Appendices. In addition, although it is somewhat outside the scope of this Plan, the expressed intent of both the University and the Town is to expand this work and incorporate identical practices and procedures for the areas of their jurisdictions outside the Eagleville watershed.

Since this is a precedent-setting TMDL, much thought has been given to methods of tracking progress. At present, the approach is a three-tiered system that focuses on:

1. Close tracking of the area of new and disconnected impervious cover.
2. Flow monitoring to ascertain whether changes in impervious cover will improve the hydrologic regime of the Brook.
3. Continued (CTDEP) monitoring of fish and macroinvertebrates, to track long-term trends in the health of the Brook.

Using the first tier as our primary short-term tracking system, and based on the updated watershed characterization and impervious cover disconnection estimates for both the Top Ten and all 110 projects, the TMDL 11% impervious cover goal seems achievable.

As with all WBPs, this Plan is to be considered a work in progress that is flexible and subject to change as the project continues and the three partners learn from their experience. To ensure coordination and oversight of implementation of the Plan, it is recommended that a Watershed Management Team coordinated by a part-time Team Leader be created.

Progress made to date indicates that the "IC-TMDL" approach may be a highly effective way to address listed waterbodies afflicted with complex, unspecified water quality problems related to urbanization.

Introduction

Eagleville Brook has been listed by the Connecticut Department of Environmental Protection (CT DEP) in the *2004 List of Connecticut Waterbodies Not Meeting Water Quality Standards* (CT DEP, 2004), due to exceedences of Connecticut's aquatic life criteria. Although this impairment was identified, the cause was unknown. It was determined that the most probable cause of the impairment was a complex array of pollutants transported by stormwater.

As a result of this listing, and in response to section 303(d) of the Federal Clean Water Act, CT DEP was required to develop a total maximum daily load (TMDL) for the watershed. The TMDL represents the maximum loading that a waterbody can receive without exceeding water quality criteria. The final TMDL for Eagleville Brook was completed in February 2007, and approved by the U.S. EPA shortly after. The Eagleville Brook TMDL was the first of its kind, in that it used impervious cover (IC) as a surrogate for the complex array of pollutants impairing aquatic life in the Brook.

In response to this precedent-setting TMDL, the UConn Center for Land Use Education and Research (CLEAR) led a two-year project to assist the University and the Town of Mansfield to respond. This Watershed Based Plan (WBP) constitutes that response, although implementation will be ongoing for the foreseeable future. All three partners -- CT DEP, UConn, and the Town – provided funding support for this project.

The goal of this Watershed Based Plan is to provide a single, cohesive document that can help guide future development at the UConn campus, help provide focus for retrofit opportunities, and facilitate communications between the Town of Mansfield and UConn in regards to stormwater and development issues. The EPA guidance document (US EPA, 2008) on WBP development was used as a reference for the creation of this watershed plan.

To facilitate practical use of the WBP, the authors have made a concerted effort to keep this document succinct. Additional information is contained in two major documents, the Eagleville Brook TMDL analysis itself, which describes the background studies and pollutant target calculations (CT DEP, 2007), and the Project Technical Report, prepared by the Center for Watershed Protection and the Horsley Witten Group, which details the technical results of field surveys and pollutant reduction estimates (CWP and HWG, 2010). Key information from these two foundational documents will be summarized and referred to in this WBP. Also, a narrative description of the project, covering the period up to the creation of this report, is contained in a paper published in Watershed Science Bulletin in October, 2010 (Arnold et al., 2010).

Eagleville Brook and its Watershed

Physical characteristics

Eagleville Brook is located in northeastern Connecticut, and has a 2.4 square mile drainage area (Figure 1). It is a tributary to an impoundment of the Willimantic River, Eagleville Pond, and is a sub-regional basin in the Thames River watershed. The entire watershed is located in the town of Mansfield. A portion of the heavily developed University of Connecticut main campus is located within the watershed (Figure 2). Although much of the watershed is forested with low-density residential housing, the portion on the UConn campus is essentially an urban area, with large amounts of impervious surfaces. A portion of Eagleville Brook is piped beneath the campus, similar to many urban streams.

Four subwatersheds of Eagleville Brook have been identified, and two segments of the Brook (Eagleville Brook_01 and Eagleville Brook_02) have been found to be impaired (CT DEP, 2004). The surface water classification for both segments of the Brook is B/A. The B/A classification means that Eagleville Brook is not meeting the goal of Class A Water Quality Criteria and attainment of Class A designated uses.

Sources of pollution that need to be controlled

The most probable cause of the aquatic life impairment is "a complex array of pollutants transported by stormwater," as identified in the TMDL. The likely cause of the high quantity and low quality of this stormwater is the large amount of impervious cover (IC) in the watershed. In this innovative TMDL, IC was used as a surrogate measure of the complex array of pollutants. Justification for the use of this surrogate can be found in detail in the TMDL analysis document (CT DEP, 2007). An analysis of stream health (using several macroinvertebrate indicators) and impervious coverage was performed by CT DEP for 125 streams in Connecticut (Bellucci, 2007; CT DEP, Appendix 2, 2007). Findings from this analysis indicated that no streams met Connecticut's aquatic life criteria when there was more than 12% IC in the watershed. Although there was substantial variation in stream health in watersheds with less than 12% IC, the 12% level was identified as an appropriate threshold for aquatic life impairments.

Load reductions needed

CT DEP applied a margin of safety (MOS) of 1% for the TMDL target; therefore the overall IC target for the watershed as identified in the TMDL document is 11% IC, or 154.2 acres. After updating CT DEP modeling with high resolution imagery, the watershed IC was determined to be 16.9% (236.2 acres), 51.0 acres of which was determined to be disconnected.

The "effective" IC in the watershed is therefore (236.2 – 51.0) = 185.2 acres, making the load reduction goal (185.2 – 154.2) = **31.0 acres of IC** (Table 1).

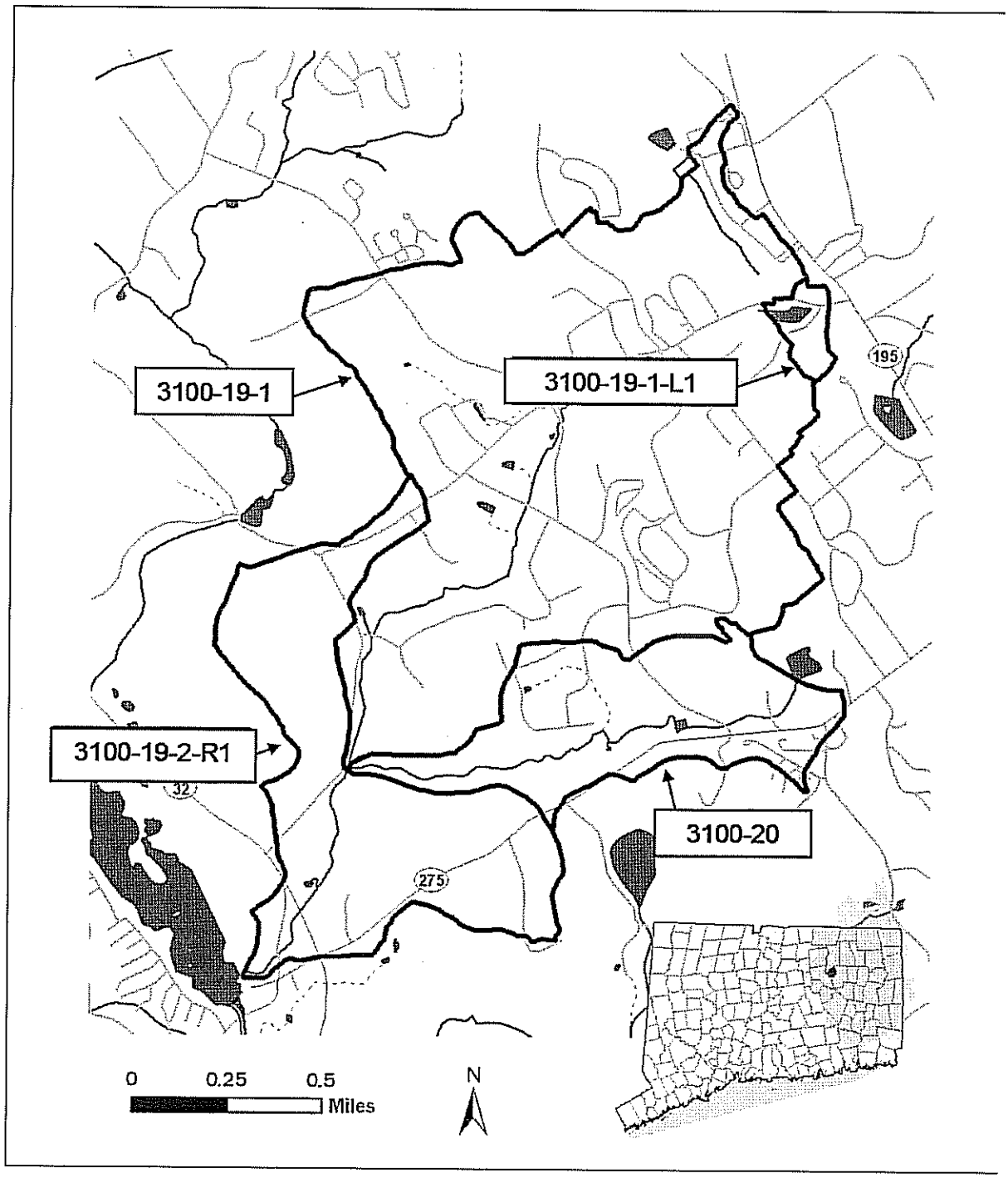

Figure 1. Eagleville Brook watershed and sub-basins. Inset shows position of watershed (red) within the Thames River basin (orange).

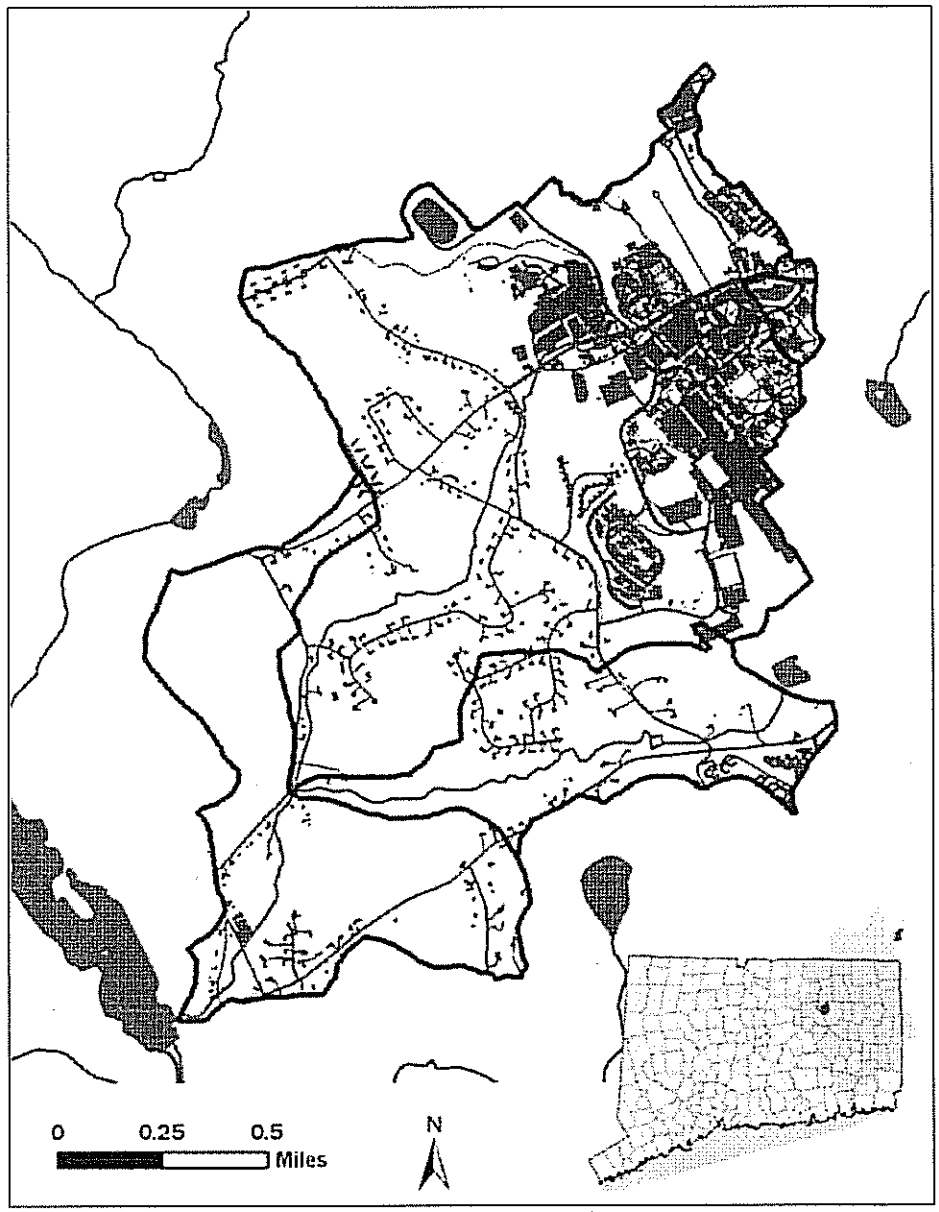

Figure 2. Eagleville Brook watershed, with impervious cover in red. Inset shows position of watershed (red) within the Thames River basin (orange).

Table 1. Characteristics of sub-basins in Eagleville Brook Watershed.

Sub-basin number	Basin acreage	TMDL ESTIMATE IC Acreage	TMDL ESTIMATE % IC	FIELD VERIFIED IC Acreage	FIELD VERIFIED % IC
3100-19-1	869.0	121.7	14.0%	195.2	22.5%
3100-19-1-L1	18.3	5.0	27.0%	7.1	38.8%
3100-19-2-R1	305.3	15.3	5.0%	14.9	4.9%
3100-20	208.9			19.0	9.1%
Total basin	1401.6	141.9	10.1%	236.2	**16.9%**

Total basin area (ac)	1401.6
Total IC (ac)	236.2
Disconnected IC (ac)	51.0
Corrected IC (%)	13.2%
Effective IC (ac)	**185.2**
IC target (ac)	154.2
Disconnection needed (ac)	**31.0**

It should be noted that the TMDL is for *total* impervious cover. The statewide research that the target IC was based on also used total impervious cover as the variable to compare with stream health. This is the only practicable approach when looking at landscapes at this scale. However, at the small scale of Eagleville Brook, the partners agreed that the TMDL response needed to focus on reducing *effective* impervious cover, the amount of IC that is directly connected to the stormwater system. This distinction is important; a watershed may have substantial IC, but if runoff from the surfaces is directed to pervious areas instead of into a piped stormwater system, the impact on local water bodies may be very small. Conversely, a turf area with highly compacted soils could generate runoff like an impervious surface. This distinction is likely part of the explanation for the variability in stream health noted at watershed IC percentages below 12% (CT DEP, Appendix 2, Figure 4, 2007).

Management goals

Reduction in effective IC may be accomplished by removing IC, directly disconnecting impervious areas from the stormwater system, or by providing equivalent IC reductions in the watershed. It should be noted that this is the target for the entire watershed. To be most effective, reductions in effective IC will likely need to be targeted at the more heavily developed UConn campus.

As shown in Table 1 and noted above, the project team first updated and improved the TMDL analysis estimates of IC, by hand-digitizing IC from higher resolution and more recent satellite imagery (from 2008). In the summer of 2009, this analysis was followed by an extensive field survey conducted by CLEAR faculty and experts from the Center for Watershed Protection (CWP) and Horsley Witten Group (HWG). Staff from the UConn Office of Environmental Policy and CT DEP also participated in the field work.

A total of 110 potential projects at 51 sites within the watershed were identified where IC disconnections could occur. Disconnected IC area and estimates of runoff volume reduction for each of these areas were calculated (CWP & HWG, 2010). Pollutant load reductions (phosphorus, nitrogen and suspended solids) were also calculated for each project based on national average removal rates. Because load reductions were based on national averages for various BMPs, actual load reductions may be more or less than the assumed value.[1] The TMDL analysis states that the goal of the TMDL is to have the Eagleville Brook watershed act ***as if*** the watershed were no more than 11% impervious cover. Thus, the watershed management goals for the Eagleville Brook watershed go beyond strict accounting of IC and include the following:

1. Achieve a healthy stream ecosystem, as indicated by CT DEP biotic indices.
2. Restore more natural hydrologic function to Eagleville Brook.
3. Reduce the effective impervious cover in the watershed
    a. Reduce overall IC where possible
    b. Disconnect IC where possible
    c. Mitigate impacts of IC where possible
4. Create implementation and planning procedures to ensure the Town of Mansfield and UConn continue to pursue goals 1-3.
    a. Implement a LID checklist for new projects in the Town of Mansfield and on the UConn campus
    b. Establish a Watershed Management Team to track implementation of Watershed Management Plan

[1] Since the "pollutant" of this TMDL is impervious cover, detailed measurements of total and effective IC take the place of pre-implementation monitoring in a more conventional TMDL. Presumably, this is one practical and financial benefit of the IC-TMDL approach. However, with regard to post-implementation monitoring of this particular project, the project team felt that in addition to tracking IC, hydrologic and, if possible, water quality parameters should be monitored to investigate the effectiveness of the IC-TMDL approach. In the future this may not be needed and represents an additional benefit to this approach.

Management measures to achieve goals

Overall Management

The establishment of the Watershed Management Team as recommended in Objective 4a will have the entire watershed as its scope. The directives of the Team will be the following:

1. Track implementation of the Management Plan
    a. Obtain relevant information on IC changes as a result of new projects or developments in the watershed
    b. Disseminate this and other relevant updated information to the interested parties via the project website
2. Organize four meetings per year to discuss progress and identify areas where support is needed
3. Coordinate efforts to obtain additional funding to reduce IC in the watershed
4. Develop annual work plans based on available funding

The Team will have representation from the three project partners of UConn, the Town of Mansfield, and CT DEP. UConn members may be from the following managerial departments (Architectural, Engineering & Building Services, Office of Environmental Policy, Facilities Operations, Residential Life, or others as appropriate) and the following academic departments (Extension, Civil and Environmental Engineering, Natural Resources and the Environment, or others as appropriate). Town of Mansfield members may be paid Town employees, members of Commissions, local business owners, or residents.

It is recommended that a part-time (0.25 FTE) Team Leader position be funded to oversee and manage the Watershed Management Team. Funding for this position could come from external sources, or from UConn. The Team Leader would be responsible for ensuring progress toward, and documentation of, the management goals as outlined above, in consultation with the Management Team.

Implementation Framework

Since the Eagleville Brook watershed is quite diverse with regard to land cover, management measures may be different for each sub-basin. Therefore, specific recommendations for sub-basins are proposed, in concert with implementation objectives identified in the TMDL:

Stream reach CT 3100-19_01

The watershed of stream reach CT 3100-19_01 contains large tracts of undeveloped forest and fields, and some low-density residential housing. This reach drains sub-basin 3100-19-2-R1. King's Brook (basin 3100-20) also drains to this reach, as does the upper reach of Eagleville Brook (CT 3100-19_02). Therefore, the management measure

recommended in this sub-basin is anti-degradation. This sub-basin is not located on UConn property, so the Town of Mansfield would have primary responsibility for maintaining its function. This could be achieved through evaluating any new proposed development through the lens of this plan. Homeowner education regarding landscape management practices might also be beneficial to the Brook. However, the potential impact on water quality in Eagleville Brook would likely be fairly small due to the dominant impact from the UConn campus, which feeds into this segment from upstream.

The Center for Land Use Education and Research (CLEAR) is currently assisting the Town in reviewing its subdivision regulations and road design standards, to look for opportunities to encourage responsible growth using Low Impact Development (LID) techniques. The goal of LID is to preserve the predevelopment hydrology of a site, thereby reducing downstream impacts. Some LID tools that could be used include the following, as recommended in the Connecticut Stormwater Manual (CT DEP, 2004) and the LID manual (Prince George's County, 1999):

1. Include site planning early in the development process
2. Preserve natural hydrologic features where possible
3. Keep disturbance of soils and existing vegetation to a minimum
4. Use bioretention, rain gardens, grassed swales, water harvesting, and vegetated roofs where possible

One of the recommendations that CLEAR faculty have made to the Town of Mansfield is to require applicants submitting new projects to complete a checklist. This checklist contains various LID items that are suggested for residential developments. The structure of the checklist is such that a developer first is asked which LID components they will be using on a project. If LID cannot be used, the reason for this must be justified. After consulting with the technical project team, checklists from Attleboro, MA, Guilford, CT, and the new 2010 Rhode Island Stormwater Design and Installations Standards (RI DEM & CRMC, 2010) were reviewed; the CLEAR team created a composite of these examples for the consideration of Mansfield (Appendix A).

Stream reach CT 3100-19_02

This reach drains two sub-basins. Both sub-basins are highly developed, with 38.8% IC in the smaller watershed around Swan Lake[2] on the UConn campus (3100-19-1-L1), and 22.5% IC in basin 3100-19-1 (Figure 2, Table 1). The first implementation objective for basin 3100-19-1 is to preserve the integrity of the undisturbed portions of the watershed. For example, in the headwaters of the Brook, north of where it enters the

[2] Field research from this project as well as earlier research by Dr. Jack Clausen of UConn have shown that Swan Lake drains to the Fenton watershed under all conditions but very high flow, at which point it drains to both the Fenton and Eagleville. The size storm at which this occurs is not known. However, since this subbasin was included in the TMDL, we have included it in this WBP.

channel under the campus and west of the towers dorm complex, the area surrounding the Brook is in excellent condition, with a substantial wooded buffer on both sides. This condition should be maintained to preserve the existing function in this section of the Brook.

The next implementation objective for both sub-basins in this reach is to reduce the percentage of connected impervious cover, accomplished by improved stormwater management. Due to the high percentage of IC on the UConn campus, reduction of effective IC will need to be accomplished through retrofitting existing sites. This may involve physical removal of IC where it is not functional, such as in satellite parking areas that are in poor condition, or replacement of impervious areas with pervious alternatives. However, it will more often involve physical disconnection of IC, by techniques such as redirecting roof leader downspouts to pervious areas. Installing bioretention areas to capture runoff from parking lots and/or roads will also be a valid way to reduce effective IC.

The field survey performed in the summer of 2009 identified 110 retrofit opportunities at 51 sites around the portion of the UConn campus in the Eagleville Brook watershed (available at http://clear.uconn.edu/projects/tmdl/library.htm). A list of high priority projects was also developed, based on both technical and non-technical factors. (Appendix B). If the high priority projects were implemented on campus, the effective IC would be reduced by 30.5 acres, and 32 pounds of phosphorus, 207 pounds of nitrogen, and 6430 pounds of suspended solids would be prevented from reaching Eagleville Brook. The estimated cost to implement these high priority projects is $1,350,600 (CWP & HWG, 2010). Pollutant load reduction and cost estimates for the high priority projects can be found in Appendix B. In addition, two-page concept papers and 25% design drawings were developed for the high priority projects; these are contained in the Technical Report, and are posted on the project website.

These projects should be used as suggested techniques to reduce effective impervious cover in the watershed. Individual projects may require modifications to the preliminary plans as input is received throughout the design process, and as site conditions are determined. However, the area of IC treated for each of the projects should remain consistent with the area listed in the Technical Report. Additionally, as projects are in the detailed design phase, consideration should be given to how the proposed project fits in with the Campus Landscape Master Plan (Sasaki, 2010). A reasonable attempt should be made to align the goals of individual TMDL-related projects with this Plan.

It has been noted that many of the turf areas on the UConn campus are highly compacted, and therefore the infiltration capacity has been reduced such that these surfaces act more like an impervious surface. Renovation of soil structure in such locations would likely improve the infiltration capacity at the site, reducing the volume of

stormwater that runs off. This approach could help reduce the effective impervious area of this highly developed portion of the watershed, and is recommended where feasible on campus.

It is recommended that the Architectural, Engineering & Building Services division at UConn require all new and renovation project proposals to include a checklist similar to the one used by the Town of Mansfield. Although LID practices are becoming more common on campus, and AEBS staff has been recommending the use of LID in new projects, a checklist will help to provide clear, consistent guidance to outside firms who want to perform work on the UConn campus. Discussions are underway with the Office of Environmental Policy and the Office of University Planning to implement such a checklist (see Appendix A). The Office of University Planning has initiated a larger review of processes and procedures that project applicants need to conform to, with the goals of streamlining the process for applicants, while ensuring compliance with regulations and protection of natural resources. The expectation is that the LID checklist will become a part of this revamped process.

The Eagleville Brook watershed bisects the University campus (Figure 2). Although this Plan is aimed at the area of campus that is in the Eagleville Brook watershed, it is recommended that the University strive to implement these management procedures for the entire campus. It should be noted that the adjacent watershed drains to the Fenton River, which supplies the drinking water reservoir for the City of Willimantic a short distance downstream.

Implementation schedule, milestones, and evaluation criteria

Several different entities will need to collaborate to implement this watershed management plan. Table 2 identifies action items and associated timelines, products, and evaluation criteria.

It is important to note that, despite the framework of the high priority projects, implementation on campus will take place not in a linear progression of projects but in an opportunistic fashion, as new development, redevelopment, and other initiatives (e.g., landscape plans) present opportunities to incorporate TMDL-related practices. This philosophy, by consensus of the project partners, is deemed to be most pragmatic and cost-effective, and thus most likely to yield results. In fact, significant implementation, including high priority projects, has already occurred or is underway, in advance of this WBP. See Appendix C for a summary of these projects.

Table 2. Action items, timelines, products/milestones, and evaluation criteria.

Action items	Lead entity	Timeline	Products	Evaluation criteria
Form Watershed Management Team, including Team Leader	CLEAR	1 year	4 meetings per year	Participation, recommendations from Team to Team Leader
Develop LID checklist for new projects	CLEAR/Town of Mansfield/UConn AEBS, OUP & OEP	1 year	LID checklist	Adoption of checklists by Town of Mansfield and UConn AEBS & OUP
Continue water quantity monitoring and increase water quality monitoring	UConn NRE department	1 year	Monitoring results	Correlation (or lack thereof) of TMDL implementation with water quantity and quality trends
Implement high priority stormwater retrofits on UConn campus	CLEAR/UConn AEBS, OUP & OEP	0-5 years	Completed projects	Documentation of successful project implementation
Implement other LID retrofit opportunities as they are identified	CLEAR/UConn AEBS, OUP & OEP	0-10 years	Completed projects	Documentation of successful project implementation
Construct new projects incorporating TMDL goals and LID practices	Town of Mansfield/CLEAR/UConn AEBS, OUP & OEP	0-10 years	Completed projects	Amount of total and effective IC added/subtracted from watershed

CLEAR=University of Connecticut Center for Land Use Education and Research
AEBS=Architectural Engineering and Building Services
OUP=Office of University Planning
OEP=Office of Environmental Policy

Monitoring

Measurements of new IC disconnections will be performed. Each incremental disconnection will be added to the area already disconnected, to measure progress towards the goal of 35.0 additional acres to be effectively disconnected. As noted in Table 2, new projects will also be evaluated for their effect on the total and effective IC totals for the watershed.

In addition to IC disconnections, benthic macroinvertibrates were identified as the primary metric to measure progress of meeting Aquatic Life Support in Eagleville Brook. Project partner CT DEP conducts these surveys, and intends to continue this work in Eagleville Brook.

A weir and datalogger have also been installed in Eagleville Brook just west of the main campus (Figure 3), in order to track water quantity in the Brook at this point. Data from the weir will provide background information on the hydrologic response of the campus watershed to precipitation events, and provides an additional metric to track as IC disconnections occur. This monitoring began in November 2009. Precipitation is also being measured on campus, (approximately 1200 feet away from the weir) as part of the green roof monitoring project. Daily precipitation and flow at the Eagleville Brook weir have been summarized (Figure 4), and these data are available upon request.

CLEAR faculty member Michael Dietz and UConn Professor John Clausen have recently obtained a small grant to purchase equipment to automatically post the real-time monitoring results to the World Wide Web. This website is currently operational, and can be accessed at http://clear.uconn.edu/projects/eagleville, or through the TMDL project website, located at http://clear.uconn.edu/projects/tmdl/.

CT DEP has performed some water quality measurements downstream of the weir. More detailed sampling for chlorides, metals, and phosphorus has been proposed by CLEAR for FY11 Section 319 funding support. An EPA approved Quality Assurance Project Plan (QAPP) will be required before this monitoring commences.

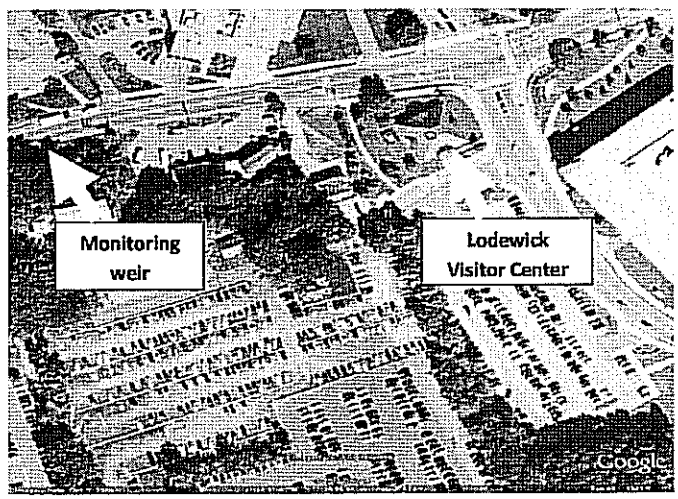

Figure 3. Location of monitoring weir.

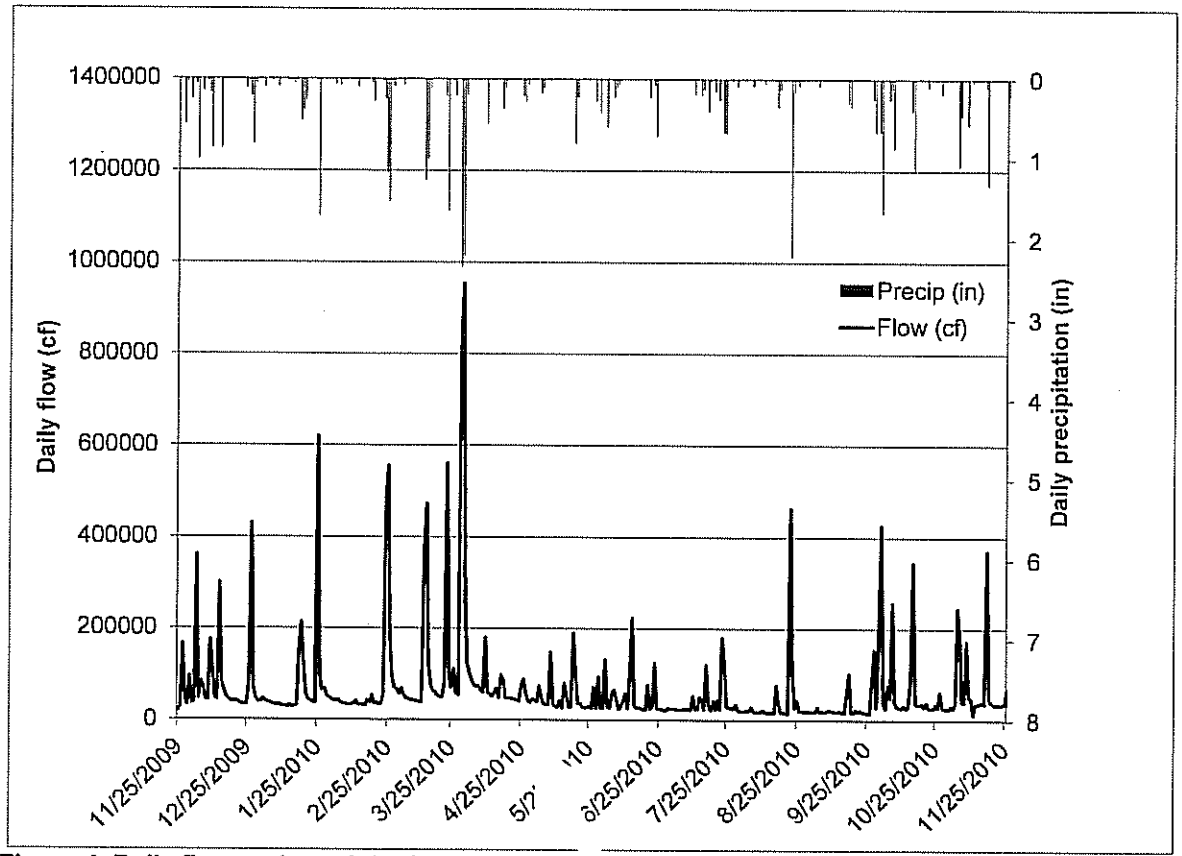

Figure 4. Daily flow and precipitation at Eagleville Brook monitoring site.

Measuring progress

Progress will be measured with a three-tiered set of criteria directly corresponding to the management goals:

First tier: The amount of total, connected and disconnected impervious cover will be tracked. This will occur as projects (both new and retrofit) occur.

Second tier: The hydrology of Eagleville Brook will be monitored at the weir described in a previous section. This will allow the cumulative hydrologic impact of TMDL actions to be assessed.

Third tier: As noted, CT DEP will continue its stream macroinvertebrate sampling in the sample locations along Eagleville Brook. The biotic indices scores will allow assessment of the ultimate impact of the TMDL program on the health of the stream.

This Plan may also be revised to reflect updated monitoring data, or other circumstances that necessitate a change in focus to achieve the initial goals of the Plan.

Education/outreach

Several members of UConn Extension have been involved with the TMDL process since its inception. This representation from the CT Nonpoint Education for Municipal Officials (NEMO) and Center for Land Use Education and Research (CLEAR) teams brings many years of experience in providing education to a variety of audiences on similar topics. To date, contributions of the CLEAR/NEMO team include:

-Technical guidance on design and installation of practices

-Training for facilities and landscape staff on installation and maintenance of LID techniques

-Publicly available electronic media (website http://clear.uconn.edu/projects/tmdl/) with information on the progress of the project, documents, and interactive maps.

-Presentations on the project have been made at 6 regional or national conferences, and two papers or proceedings have been written to date.

- An informational brochure about the watershed and the TMDL has been created.

It is suggested that information about this project continue to be posted on the website, and that, as funding permits, CLEAR/NEMO staff be available to give talks on the project, both to interested towns in CT and at appropriate regional and national venues.

Additionally, it is suggested that an informational workshop about the watershed and the TMDL be developed. CLEAR faculty and the Town Planning Office are in discussion about the timing of such a workshop.

Technical and financial assistance needed

Cost estimates for 110 projects were calculated (CWP & HWG, 2010). Potential funding sources were not identified in the TMDL Analysis Report, however it is expected that funding for implementation will come from a mixture of internal UConn and Mansfield funding, in-kind donations of labor and/or materials, and externally obtained grants.

Maintenance costs have not yet been calculated. It is estimated that the bulk of maintenance costs will be contributed as in-kind labor/materials from University of Connecticut Facilities and Landscaping programs.

Given that this project is centered on the UConn campus, technical expertise is readily available. A variety of staff from the following departments have worked on this project to date: Architectural Engineering and Building Services (AEBS), Office of

Environmental Policy (OEP), Office of University Planning (OUP), Extension (CLEAR, NEMO), and the Natural Resources and the Environment department. Two outside organizations with extensive LID experience, the nonprofit Center for Watershed Protection, Inc., and Horsley-Witten Group, have also worked on various aspects of the project. Additional technical support has been provided by CT DEP staff. Also, through the implementation of the TMDL checklist, it is anticipated that contractors working on both new construction and renovation projects at UConn and in Mansfield will be required to supply technical expertise of their own.

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APPENDIX A. Proposed Guidance and LID checklists for UConn and Town of Mansfield

Guidance Document for Low Impact Development

Best Management Practices for UConn

June, 2011

In 2007, the Connecticut Department of Environmental Protection approved a Total Maximum Daily Load (TMDL) for the Eagleville Brook watershed in Mansfield, CT. Aquatic life impairments in the brook were the driving force behind development of this TMDL. Typically, a TMDL is written for a pollutant such as nitrogen, phosphorus, or bacteria. In this case, runoff from the impervious surfaces in the highly urbanized area of the UConn campus such as parking lots, buildings and roads was suspected to be causing the impairments in Eagleville Brook. Therefore, CT DEP approved this TMDL for impervious cover (IC), which is the first of its kind in the nation.

Typical development approaches do not provide adequate treatment for stormwater runoff from impervious areas, and receiving waters suffer a variety of impairments due to these human induced changes in the landscape. Stormwater runoff has been identified as one of the biggest causes of stream quality degradation.

When an undeveloped site is converted into residential housing or commercial areas, roads, roofs, parking lots and driveways replace the native vegetation and soils that were on the site. As would be expected, much more water runs off developed sites in response to rain storms. Pollutants, such as oil from vehicles, bacteria, nitrogen and phosphorus collect on the impervious surfaces and are washed off during precipitation events.

Low impact development (LID) is an approach that will help to minimize the impacts of traditional development, while still allowing for growth. Pioneered in Maryland[1], this approach is being successfully utilized throughout the country. LID has also been adopted as the preferred method of site design in the 2004 Connecticut Stormwater Quality Manual[2]. In addition to protecting ecosystems and receiving waters, the LID approach can often result in cost savings on projects[3].

The following areas of focus will help guide planning for your project:

1. *Assessment of natural resources.* Ideally, LID is considered early in the site planning process. The objective is to allow for development of the property, while maintaining the essential hydrologic functions of the site. A thorough assessment of the existing natural resources on the site needs to be performed, so that essential features can be preserved, and suitable sites for development can be identified.

2. *Preservation of open space.* Open space or conservation subdivision design can complement the LID approach. Conservation subdivisions provide a key way to protect natural resources while still providing landowners with the ability to develop their property. In most cases, the number of residential units allowed in a conservation subdivision equal the number allowed under conventional subdivision regulations.

3. *Minimization of land disturbance.* Once the development envelope is defined, the goal is to minimize the amount of land that needs to be disturbed. Undisturbed forest, meadow, and wetland areas have an enormous ability to infiltrate and process rainfall, providing baseflow to local streams and groundwater recharge. Construction equipment causes severe compaction of soils, so after development, even areas that are thought to be pervious such as grass, can be quite impervious to rainfall.

4. *Reduce and disconnect impervious cover.* With careful planning, the overall percentage of impervious cover in a proposed project can be minimized. Roads, driveways, sidewalks, parking lots, and building footprints can be minimized to reduce impacts, but still provide functionality. Additionally, not all impervious surfaces have the same impact on local waterways. With proper planning, runoff from impervious surfaces can be directed to pervious areas such as grass or forest, or to LID treatment practices.

5. *LID practices installed.* There are a variety of practices that can be used to maintain the pre-development hydrologic function of a site. For more detail on the following practices, see the references below:

-Bioretention areas or rain gardens are depressed areas in the landscape that collect and infiltrate stormwater.

-Vegetated swales can be used to convey runoff instead of the typical curb and gutter system, and they can also infiltrate and filter stormwater.

-Water harvesting techniques can be employed, so that stormwater can be a resource rather than a waste product.

-Pervious pavements allow rainfall to pass through them, and can be installed instead of traditional asphalt or concrete.

-Green roofs can reduce stormwater runoff through evaporation and transpiration through plants, and they also can help save on heating/cooling costs.

LID represents a change from typical design approaches. Proper installation and maintenance of LID practices is critical to their performance. Therefore, installation should be performed by someone with LID experience to avoid costly mistakes.

With proper design and installation, LID can provide multiple benefits including decreased construction costs, reduced impacts to receiving waters, increased habitat for wildlife, beautiful landscape features, and increased property values.

References

[1]Prince George's County, Maryland. 1999. Low-Impact Development Design Strategies: An Integrated Design Approach. MD Department of Environmental Resources, Programs and Planning Division.

[2]CT DEP. 2004. Connecticut Stormwater Quality Manual. Department of Environmental Protection. 79 Elm St., Hartford CT. Available at Mansfield Town Hall, or online at http://www.ct.gov/dep/cwp/view.asp?a=2721&q=325704&depNav_GID=1654

[3]US EPA. 2007. Reducing Stormwater Costs through Low Impact Development (LID), Strategies and Practices. EPA Publication number 841-F07-006.

UConn Low Impact Development (LID) Site Planning and Design Checklist

Items listed below need to be considered by developers in the creation of site plans. Due to individual site differences, not all items will apply to each individual site. Check items that have been applied, or explain why the items have not been used. For more information on LID practices and how to implement them please refer to the 2004 Connecticut Stormwater Quality Manual. Where applicable, references have been made to the appropriate section of the University of Connecticut Campus Sustainable Design Guidelines (SDGs) (JJR & Smithgroup, 2004).

1. **Assessment of Natural Resources** *(See SDGs, page 7, Goal 1)*
   - ☐ Natural resources and constraints have been indicated and are identified on the plans (wetlands, rivers, streams, flood hazard zones, meadows, agricultural land, tree lines, slopes [identified with 2 foot contours], soil types, exposed ledge & stone walls.
   - ☐ Onsite soils have been assessed to determine suitability for stormwater infiltration, and identified on plans.

     See sheet#_____

   - ☐ Natural existing drainage patterns have been delineated on the plan and are proposed to be preserved or impacts minimized.
   - ☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

     _____
     _____
     _____
     _____

2. **Minimization of Land Disturbance** *(See SDGs, page 7, Goal 2)*
   - ☐ The proposed building(s) is/are located where development can occur with the least environmental impact (for projects that have NOT had an Environmental Impact Evaluation as required under CT Environmental Policy Act).
   - ☐ Disturbance areas have been delineated to avoid unnecessary clearing or grading.
   - ☐ Plan includes detail on construction methods and sequencing to minimize compaction of natural and future stormwater areas.

☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

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3. **Reduce and Disconnect Impervious Cover** *(See SDGs, page 11, Goal 1)*
   - ☐ Impervious surfaces have been kept to the minimum extent practicable, using the following methods (check which methods were used):
     - ☐ Minimized road widths
     - ☐ Minimized driveway area
     - ☐ Minimized sidewalk area
     - ☐ Minimized building footprint
     - ☐ Minimized parking lot area
   - ☐ Impervious surfaces have been disconnected from the stormwater system, and directed to appropriate pervious areas, where practicable. Pervious areas may be LID practices, or uncompacted turf areas.
   - ☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

_____

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4. **LID Practices Installed** *(See SDGs, page 11, Goal 1)*
   - ☐ Sheet flow is used to the maximum extent possible to avoid concentrating runoff.
   - ☐ Vegetated swales have been installed adjacent to driveways and/or roads in lieu of a curb and gutter stormwater collection system.
   - ☐ Rooftop drainage is discharged to bioretention/rain gardens.
   - ☐ Rooftop drainage is discharged to drywell or infiltration trench.
   - ☐ Rain water harvesting methods such as rain barrels or cisterns have been installed to manage roof drainage.
   - ☐ Driveway, roadway, and/or parking lot drainage is directed to bioretention/rain gardens.
   - ☐ Cul-de-sacs include a landscaped bioretention island.
   - ☐ Vegetated roof systems have been installed.

☐ Pervious pavements have been installed.

☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

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Guidance Document for Low Impact Development

Best Management Practices for Town of Mansfield, CT

April, 2011

Similar to many towns in Connecticut, Mansfield has seen increased interest in balancing community growth and environmental conservation. When an undeveloped site is converted into residential housing or commercial areas, roads, roofs, parking lots and driveways replace the native vegetation and soils that were on the site. As would be expected, much more water runs off developed sites in response to rain storms. Pollutants, such as oil from vehicles, bacteria, nitrogen and phosphorus collect on the impervious surfaces and are washed off during precipitation events. Typical development approaches do not provide adequate treatment for this stormwater, and receiving waters suffer a variety of impairments due to these human induced changes in the landscape. Stormwater runoff has been identified as one of the biggest causes of stream quality degradation.

Low impact development (LID) is an approach that will help to minimize the impacts of traditional development, while still allowing for growth. Pioneered in Maryland[1], this approach is being successfully utilized throughout the country. LID has also been adopted as the preferred method of site design in the 2004 Connecticut Stormwater Quality Manual[2]. In addition to protecting ecosystems and receiving waters, the LID approach can often result in cost savings on projects[3].

The following areas of focus will help guide planning for your project:

1. *Assessment of natural resources.* Ideally, LID is considered early in the site planning process. The objective is to allow for development of the property, while maintaining the essential hydrologic functions of the site. A thorough assessment of the existing natural resources on the site needs to be performed, so that essential features can be preserved, and suitable sites for development can be identified.

2. *Preservation of open space.* Cluster subdivision design can complement the LID approach. Cluster subdivisions provide a key way to protect natural resources while still providing landowners with the ability to develop their property. In most cases, the number of residential units allowed in a cluster subdivision equals the number allowed under conventional subdivision regulations.

3. *Minimization of land disturbance.* Once the development envelope is defined, the goal is to minimize the amount of land that needs to be disturbed. Undisturbed forest, meadow, and wetland areas have an enormous ability to infiltrate and process rainfall, providing

baseflow to local streams and groundwater recharge. Construction equipment causes severe compaction of soils, so after development, even areas that are thought to be pervious such as grass, can be quite impervious to rainfall.

4. *Reduce and disconnect impervious cover.* With careful planning, the overall percentage of impervious cover in a proposed project can be minimized. Roads, driveways, sidewalks, parking lots, and building footprints can be minimized the reduce impacts, but still provide functionality. Additionally, not all impervious surfaces have the same impact on local waterways. With proper planning, runoff from impervious surfaces can be directed to pervious areas such as grass or forest, or to LID treatment practices. It should be noted that every project is unique, and not every LID practice will be appropriate. For example, sidewalks or bike paths may be an asset to a new subdivision, if there is some connection to existing pedestrian travel routes. However, sidewalks may not be needed in other settings, and would add unnecessary costs and impervious cover. The objective is to evaluate each site individually and determine the most appropriate management techniques to reduce impacts to waterways.

5. *LID practices installed.* There are a variety of practices that can be used to maintain the pre-development hydrologic function of a site. For more detail on the following practices, see the references below:

-Bioretention areas or rain gardens are depressed areas in the landscape that collect and infiltrate stormwater.

-Vegetated swales can be used to convey runoff instead of the typical curb and gutter system, and they can also infiltrate and filter stormwater.

-Water harvesting techniques can be employed, so that stormwater can be a resource rather than a waste product.

-Pervious pavements allow rainfall to pass through them, and can be installed instead of traditional asphalt or concrete.

-Green roofs can reduce stormwater runoff through evaporation and transpiration through plants, and they also can help save on heating/cooling costs.

LID represents a change from typical design approaches. Proper installation and maintenance of LID practices is critical to their performance. Therefore, installation should be performed by someone with LID experience to avoid costly mistakes.

With proper design and installation, LID can provide multiple benefits including decreased construction costs, reduced impacts to receiving waters, increased habitat for wildlife, beautiful landscape features, and increased property values.

References

[1]Prince George's County, Maryland. 1999. Low-Impact Development Design Strategies: An Integrated Design Approach. MD Department of Environmental Resources, Programs and Planning Division.

[2]CT DEP. 2004. Connecticut Stormwater Quality Manual. Department of Environmental Protection. 79 Elm St., Hartford CT. Available at Mansfield Town Hall, or online at http://www.ct.gov/dep/cwp/view.asp?a=2721&q=325704&depNav_GID=1654

[3]US EPA. 2007. Reducing Stormwater Costs through Low Impact Development (LID), Strategies and Practices. EPA Publication number 841-F07-006.

Town of Mansfield Low Impact Development (LID) Site Planning and Design Checklist

Items listed below need to be considered by developers when submitting plans for subdivisions. Due to individual site differences, not all items will apply to each individual property. Check items that have been applied, or explain why the items have not been used. For more information on LID practices and how to implement them please refer to the 2004 Connecticut Stormwater Quality Manual.

1. Assessment of Natural Resources

- ☐ Natural resources and constraints have been indicated and are identified on the plans (wetlands, rivers, streams, flood hazard zones, meadows, agricultural land, tree lines, slopes [identified with 2 foot contours], soil types, exposed ledge & stone walls.

- ☐ Is the property shown on the latest copy of CT DEP State and Federal Listed Species and Significant Natural Communities Map as listed in the Natural Diversity Data Base (NDDB)? If so, provide a copy of the CT DEP NDDB request form and CT DEP reply letter.

- ☐ Development is designed to avoid critical water courses, wetlands, and steep slopes.
- ☐ Soils suitable for septic & stormwater infiltration have been identified on plans.
- ☐ Soil infiltration rate/permeability has been measured and listed on plan:

  See sheet#_____

- ☐ Onsite soils have been assessed to determine suitability for stormwater infiltration.
- ☐ Natural existing drainage patterns have been delineated on the plan and are proposed to be preserved or impacts minimized.
- ☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

  _____

  _____

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  _____

2. **Preservation of Open Space**
   - ☐ Percent of natural open space calculation has been performed.
     Percent=_____
   - ☐ An open space or cluster subdivision design has been used.
   - ☐ Open space/common areas are delineated.
   - ☐ Open space is retained in a natural condition.
   - ☐ Reduced setbacks, frontages, and right-of-way widths have been used where practicable.
   - ☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

     _____
     _____
     _____
     _____

3. **Minimization of Land Disturbance**
   - ☐ The proposed building(s) is/are located where development can occur with the least environmental impact.
   - ☐ Disturbance areas have been delineated to avoid unnecessary clearing or grading.
   - ☐ Native vegetation outside the immediate construction areas remains undisturbed or will be restored.
   - ☐ Plan includes detail on construction methods and sequencing to minimize compaction of natural and future stormwater areas.
   - ☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

     _____
     _____
     _____
     _____

4. **Reduce and Disconnect Impervious Cover**
   - ☐ Impervious surfaces have been kept to the minimum extent practicable, using the following methods (check which methods were used):
     - ☐ Minimized road widths
     - ☐ Minimized driveway area
     - ☐ Minimized sidewalk area
     - ☐ Minimized cul-de-sacs
     - ☐ Minimized building footprint
     - ☐ Minimized parking lot area
   - ☐ Impervious surfaces have been disconnected from the stormwater system, and directed to appropriate pervious areas, where practicable. Pervious areas may be LID practices, or uncompacted turf areas.
   - ☐ *For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:*

     _____
     _____
     _____
     _____

5. **LID Practices Installed**
   - ☐ Sheet flow is used to the maximum extent possible to avoid concentrating runoff.
   - ☐ Vegetated swales have been installed adjacent to driveways and/or roads in lieu of a curb and gutter stormwater collection system.
   - ☐ Rooftop drainage is discharged to bioretention/rain gardens.
   - ☐ Rooftop drainage is discharged to drywell or infiltration trench.
   - ☐ Rain water harvesting methods such as rain barrels or cisterns have been installed to manage roof drainage.
   - ☐ Driveway, roadway, and/or parking lot drainage is directed to bioretention/rain gardens.
   - ☐ Cul-de-sacs include a landscaped bioretention island.
   - ☐ Vegetated roof systems have been installed, if appropriate.
   - ☐ Pervious pavements have been installed, if appropriate.

For items not checked, please use the space below to explain why that item was not appropriate or possible for your project, or any other pertinent information:

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APPENDIX B. Potential Retrofit Sites on UConn Campus, with Load Reduction and Cost Estimates.

Table 4. High Priority Projects

Site ID	Location	Retrofit	DA IC (acres)	Cost[3]	TP Removed (lb/yr)	TN Removed (lb/yr)	TSS Removed (lb/yr)	Runoff Reduction (%)	Annual Runoff Reduction (cf/yr)
A3	F Lot	Terraced bioretention	1.64	$89,000	2.3	20.0	500	20%	51,950
A4	F Lot	Bioretention	1.13	$41,000	1.6	13.8	346	40%	25,350
A5a	Motor Pool	Sand filter	1.33	$56,000	1.3	4.6	213	0%	0
A5b	Central Warehouse	Green roof	0.93	$545,400	1.1	8.0	285	45%	66,400
A8a	Hurley Hall	Bioretention	0.47	$4,800	0.2	1.6	41	40%	8,450
A8b	Hurley Hall	Rain gardens	0.20	$15,900	0.2	1.9	47	40%	8,400
A8c	Hurley Hall	Rain gardens	0.18	$22,800	0.3	2.7	67	40%	11,400
A11a-d	Lot 9	Bioretention & grass swale	1.39	$51,600	1.9	16.0	410	10% (grass swale) 40% (bioretention)	0
B3	Baseball Field Batting Cage	Gravel Wetland	15.11	$250,100	13.3	49.2	2263	0%	0
B5a	Parking Lot Y	Swale to Bioretention	1.32	$43,500	1.7	14.6	367	60%	113,250
B5b	Parking Lot Y	Swale to Bioretention	0.50	$18,300	0.7	6.1	155	60%	47,300
B11a	Parking Lot W	Bioretention	0.86	$27,200	1.1	9.1	230	60%	70,900

[3] Cost reflects an estimate of construction costs only and does not include further design and engineering.

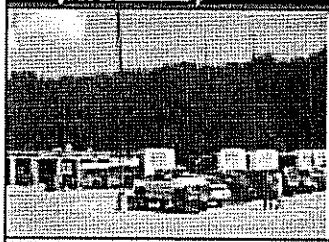
Table 4. High Priority Projects

Site ID	Location	Retrofit	DA IC (acres)	Cost[3]	TP Removed (lb/yr)	TN Removed (lb/yr)	TSS Removed (lb/yr)	Runoff Reduction (%)	Annual Runoff Reduction (cf/yr)
B11b	Parking Lot W	Bioretention	1.38	$32,600	1.3	11.0	275	60%	82,000
B11c	Parking Lot W	Swale to Bioretention	1.02	$33,800	1.3	11.4	286	60%	87,250
B11d	Parking Lot W	Bioretention	0.92	$33,500	1.3	11.3	283	60%	87,250
C4e	School of Education	Bioretention	0.34	$12,400	0.5	4.2	105	40%	21,350
C4/5a	GENT	Stormwater planters	0.12	$10,500	0.2	1.4	36	40%	7,400
C4/5d	GENT	Bioretention	0.07	$2,600	0.1	0.9	22	40%	4,650
C16	Torrey Life Sciences	Bioretention	0.28	$10,300	0.4	3.5	87	40%	17,950
C17	Quad in front of chemistry bldg	Bioretention	0.51	$18,600	0.7	6.2	157	40%	32,400
C18	Eagleville Rd	Bioretention	0.85	$30,700	1.2	10.3	259	40%	53,950
Total			***30.5***	***$1,350,600***	***32.5***	***207.5***	***6433***	*--*	***797,600***

Site A-5: Warehouse and Motor Pool

Perimeter Sand Filter/ Green Roof at Stormwater Hotspots

Project Summary



Parameter	A-5a	A-5b
Impervious Cover Treated (acres)	1.33	0.93
Runoff Reduction Volume (cu ft per 1" rain event)	0	1,444
TN Removal (lbs/yr)	4.65	8.0
TP Removal (lbs/yr)	1.25	1.1
TSS Removal (lbs/yr)	212.96	264
Estimated Cost	$56,000	$243,500

Site Description

The proposed retrofit concept is located on the UConn Campus at the motor pool and warehouse east of the facilities building (Figure 1). The motor pool's parking area is entirely impervious, with some indications of oil spillage near the fueling area. The warehouse has a large, flat roof.

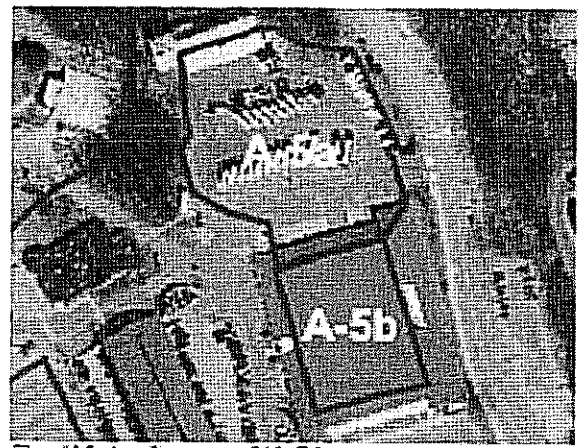
Existing Conditions

Runoff from this site is captured in an enclosed storm drain system. Although there appears to be a trap to capture drainage from inside the building, presumably leading to the sanitary sewer system, there is currently no stormwater treatment on the site. Consequently, the potential for automotive contaminants (i.e., oil, antifreeze, brake fluid) to come into contact with stormwater is high (Figure 2).

Proposed Concept

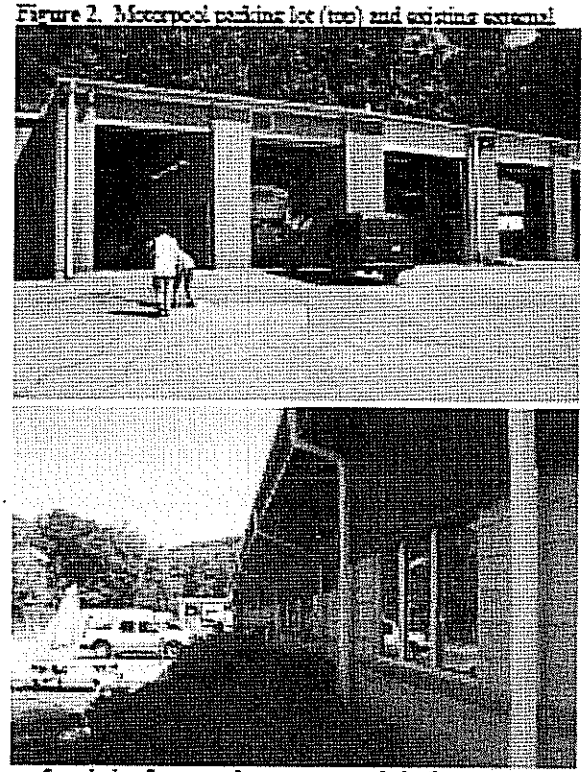
Install a perimeter sand filter to capture motorpool parking lot runoff (Site A5a), and a green roof on the rooftop (Site A5b). Convey overflow from these practices to the existing storm drain system.

Figure 1. Drainage areas to two proposed practices, a sand



filter (A5-a) and green roof (A-5b).

Figure 2. Motorpool parking lot (top) and existing external



rooftop drains from warehouse to storm drain (lower).

Preliminary Concept Designs
A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will require field survey

and more information on drainage pipes and utilities before going to construction plans.

Preliminary Hydrologic Calculations
Preliminary sizing was completed based on guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the following table.

Sizing Calculations for Sites A-5a/b		
Parameter	Value	
	A-5a	A5-b
Drainage Area, A (acres)	0.92	0.93
Imperviousness, I (%)	97	100
Volumetric Runoff Coefficient, Rv	0.92	0.95
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cf)	4,600	3,205
Porosity	–	0.4
Depth of the Filter Bed, d (ft)	1.5	–
Hydraulic Conductivity, k (ft/day)	3.5	
Max. Ponding Depth, hmax (in)	12	
Average Ponding Depth, h (ft)	0.5	
Drawdown Time, t (days)	1	
Surface Area Required, Af (sq. ft)	900	
Media Depth Required (in)	–	2.5
Surface Area Provided (sq ft)	600	40,520
Treatment Provided (% of I")	61	100

Design Considerations
For site A-5a, the depths and locations of storm drainage needs to be confirmed. Available storm drain infrastructure maps suggest that no storm drains exist within the parking lot, or in the adjacent road, but field investigations indicate at least one storm drain structure in the parking lot, and an additional structure near the entrance of the lot treated by practice A-5a. Mapping needs to be validated.

In addition, the filter at site A-5a is relatively close to mapped water and electric lines. The specific location of these utilities needs to be verified in the field.

For site A-5b, the roof's structural integrity needs to be verified to confirm that a green roof is a feasible option. Lessons learned from other green roof installations on campus should be incorporated into planning, construction, and long-term maintenance.

Maintenance
The routine maintenance activities typically associated with sand filters (A-5a) and green roofs (A-5b) are summarized in the tables below.

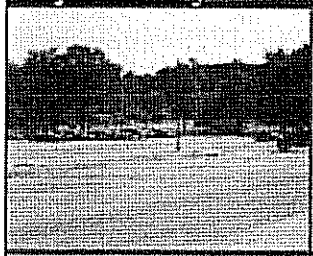
Maintenance Activities for Sand Filters	
Activity Schedule	Frequency
• Remove blockages and obstructions from inflows. • Relieve clogging. • Stabilize contributing drainage area and side-slopes to prevent erosion.	As Needed (following construction)
• Inspection and cleanup.	Annually
• Cleanout wet sedimentation chambers.	Every 2 to 3 Years
• Replace top sand layer.	Every five years

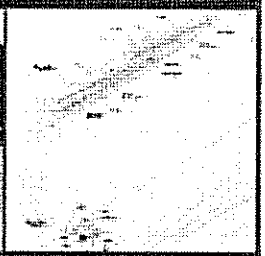
Maintenance Activities for Green Roofs	
Activity Schedule	Frequency
• Water to promote plant growth and survival. • Inspect the green roof and replace any dead or dying vegetation.	As Needed (Following Construction)
• Inspect the waterproof membrane for leaking or cracks. Repair as needed. • Inspect outflow and overflow areas for sediment accumulation. Remove any accumulated sediment or debris. • Inspect the green roof for dead, dying, or invasive vegetation. Plant replacement vegetation as needed.	Semi-Annually (Quarterly During First Year)

Site A3/4: F Lot

Terraced Parking Lot Bioretention

Project Summary





Parameter	A3	A4
Impervious Cover Treated (acres)	1.64	1.13
Runoff Reduction Volume (cu ft per 1" rain event)[1]	1130	550
TN Removal (lb/yr)	19.91	13.75
TP Removal (lb/yr)	2.31	1.6
TSS Removal (lb/yr)	3008.1	2435.9
Estimated Cost	$89,000	$41,000

[1] Although this project has no actual infiltration a reduced level of runoff reduction is calculated to account for extended filtration and evapotranspiration.

Site Description

The proposed retrofit concept is located on the UConn Campus in the F Lot. The site is a terraced parking lot, with an upper and lower parking area separated by a grassed slope (Figure 1). The site is over a former landfill with an impervious cap.

Existing Conditions

Runoff from both lots is captured in an enclosed storm drain system, which discharges directly to Eagleville Brook. Grassed areas, including a sloped island between the upper and lower parking areas and below the lower parking area, currently receive no runoff from the parking lot.

Proposed Concept

Install two bioretention areas, one in the sloped island between the upper and lower parking area (Site A3), and one below the lower parking area (Site A4). Figure 2 shows locations of proposed practices as seen in the field. Convey runoff to each practice using paved flumes. Each of the filters will allow 6-9" of ponding depth above the filter. Two bioretention filters, constructed in fill (i.e., above the landfill cap) will capture runoff from the upper parking lot. The filter bed will be sloped, ranging from 6" to 18", constructed above the existing grade. An underdrain will be installed at the lower

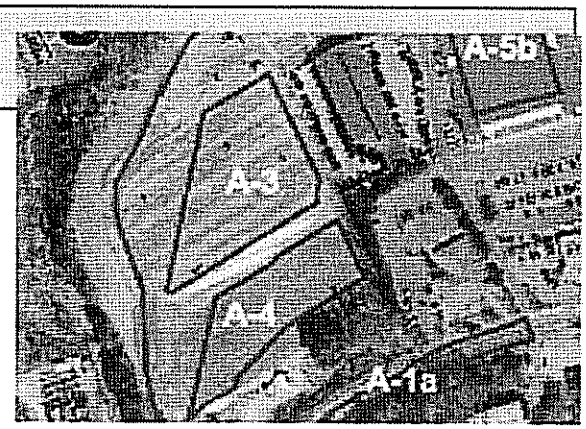
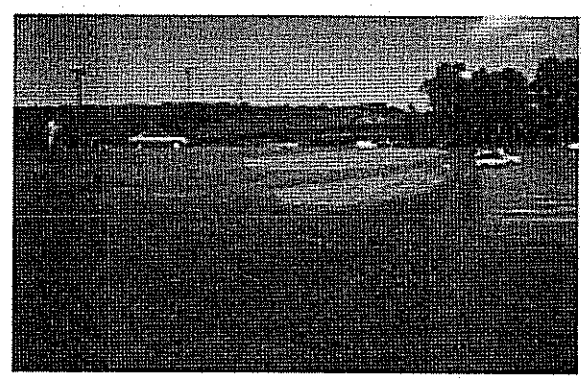


Figure 1. Drainage areas to proposed bioretention cells.



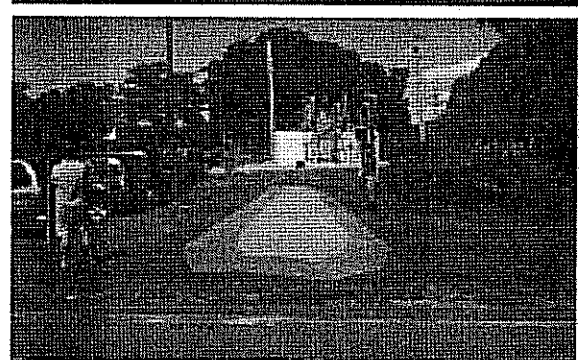


Figure 2. Location of terraced A3 bioretention down slope between two parking areas (upper photo). Location of A4 bioretention cell near entrance to parking lots (lower photo).

end of each filter. This underdrain will tie into an overflow structure which will then convey stormwater to a very deep storm drain system.

At the lower site A4, the practice will be excavated to a filter depth of 12", then captured in an underdrain and conveyed to Eaglevile Brook. The site overflow for this practice is a spillway which allows overland flow to the Brook.

Preliminary Concept Designs
A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will require field survey and more information on drainage pipes, utilities, and soils (among other things) before going to construction plans.

Preliminary Hydrologic Calculations
Preliminary sizing of the bioretention area was completed based on guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the following table.

Sizing Calculations for Sites A3/A4		
Parameter	Value	
	A3	A4
Drainage Area, A (acres)	1.64	1.13
Imperviousness, I (%)	100	100
Volumetric Runoff Coefficient, Rv	0.95	.95
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cf)	5,648	3,901
Depth of the Filter Bed, d (ft)	1	1
Hydraulic Conductivity, k (ft/day)	1	1
Max. Ponding Depth, hmax (in)	9	9
Average Ponding Depth, h (ft)	0.375	0.375
Drawdown Time, t (days)	2	2
Surface Area Required, Af (sq. ft)	2,054	1,418
Surface Area Provided (sq ft)	3,125	500
Treatment Provided (% of I)	100	35

Design Considerations
For site A3, the greatest design constraint is the landfill cap below the filter proposed in the sloped median between the two parking areas. The proposed design assumes that the filter is completely in fill, with the bottom of the filter adjacent to the existing ground surface. Designers should investigate the possibility of excavating slightly into the landfill cap, providing a flat filter bottom at a depth of 18".
Three potential constraints need to be investigated:

- Electric lines are in the vicinity of the proposed filter, and their locations need to be confirmed.
- The filter is shallow due to potentially high groundwater table. Need to confirm depth of high groundwater.
- Available mapping suggest that the landfill cap does not extend to this area of the F Lot site. Need to confirm.

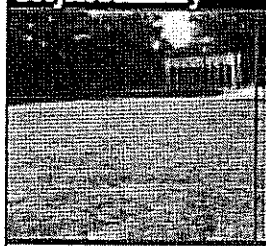
Maintenance
Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

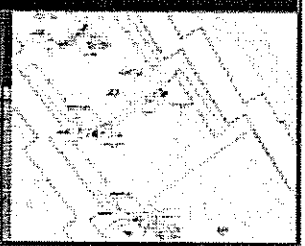
Maintenance Activities for Sites A3/A4	
Activity Schedule	Frequency
• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. • For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and ensure they are immediately stabilized with grass cover.	As Needed (following construction)
• Prune and weed bioretention area to maintain appearance. • Remove accumulated trash and debris.	Regularly (Monthly)
• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris. • Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
• Remove and replace existing mulch.	Every 2 to 3 Years

Site A8: Hurley Hall

Rooftop Disconnection with Bioretention

Project Summary





Parameter	A8a	A8b	A8c
Impervious Cover Treated (acres)	0.51	0.81	0.88
Runoff Reduction Volume (cu ft per 1" rain event)	184	212	304
TN Removal (lb/yr)	1.62	1.86	2.65
TP Removal (lb/yr)	0.19	0.21	0.31
TSS Removal (lb/yr)	40.79	46.9	67.39
Estimated Cost	$4,900	$13,900	$22,800

Site Description

The proposed concepts are located in the quad area of the Hurley Hall Student Residences, which are located on the UConn Campus on the north side of N Eagleville Road. The quad area is terraced and slopes toward Eagleville Rd.

Existing Conditions

Runoff from the walkways along the quad area drain to the central grass quad area. Gully erosion is evident in the quad area and along walkways, and sand and gravel has accumulated on the paths. Yard inlets in the quad area are full of sediment. Rooftop runoff from the residences is conveyed via internal rooftdrains in the storm drain system.

Proposed Concept

Install bioretention areas in three locations in the quad area to capture walkway runoff. These three locations are shown in Attachment B. Install trench drains across the walkway to intercept runoff and convey it into the bioretention practices.

Construct a forebay area at the bioretention inlets to dissipate the energy and velocity of the runoff entering the bioretention areas. The bioretention areas should have a filter depth of 24 inches and provide 6-9 inches of ponding depth.

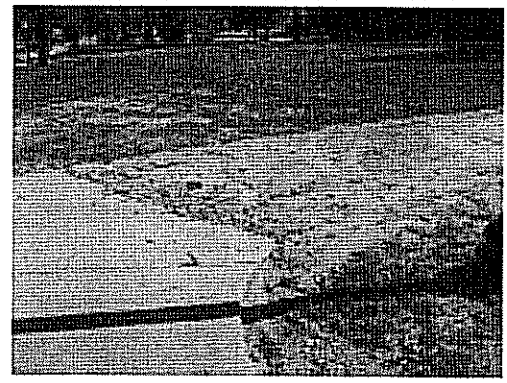


Figure 1. Runoff from quad walkways resulting in erosion (top); Sediment accumulation on walkways and in quad area (bottom).

Due to the compacted nature of the quad soils, an underdrain should be included in the design of the larger bioretention areas. The underdrain and overflow should tie into existing yard drains. The smaller areas in the center of the quad can be designed to overflow into existing yard inlets.

Soils in the quad should be amended as shown on the site plan to improve porosity and infiltration. Landscaping can be incorporated into these amended areas.

Preliminary Concept Designs

25% concept designs for the proposed retrofit can be found in attachment B. Preliminary plan views and project details are included. These initial plans will need to be further refined as this project proceeds towards construction.

Preliminary Hydrologic Calculations

Preliminary sizing of the bioretention area was completed based on guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the table below.

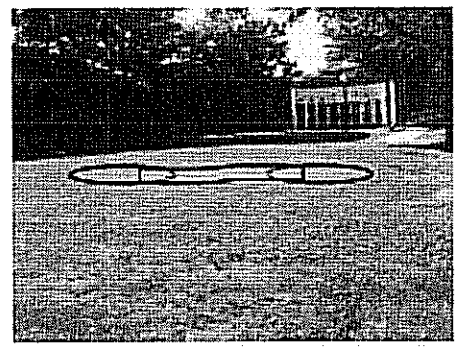
Sizing Calculations for Site A8			
Parameter	Value		
	A8a	A8b*	A8c
Drainage Area, A (acres)	0.51	0.81	0.88
Imperviousness, I (%)	92	51	21
Volumetric Runoff Coefficient, Rv			
Rainfall Depth, P (in)	1	1	1
Water Quality Volume, WQv (cf)	1631	796	760
Depth of the Filter Bed, d (ft)	2.5	2.5	2.5
Hydraulic Conductivity, k (ft/day)	1	1	1
Max. Ponding Depth, hmax (in)	9	9	9
Average Ponding Depth, h (ft)	0.375	0.375	0.375
Drawdown Time, t (days)	2	2	2
Surface Area Required, Af (sq. ft)	709	347	330
Surface Area Provided (sq ft)	200	250	400
Treatment Provided (% of 1")	28.2	66.3	100
*note two bioretention areas are combined			

Design Considerations

- While utility constraints are expected to be minimal, detailed utility mapping should be obtained before completing the final project design.
- This project presents an opportunity for students and faculty at Uconn to be involved in the final design and construction of this project.

Maintenance

- Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.



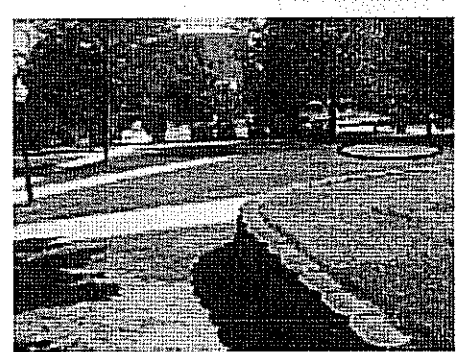
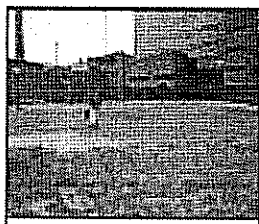


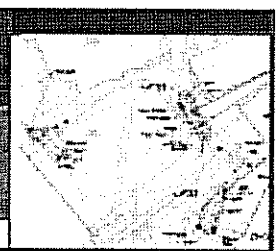
Figure 2. Proposed location of bioretention areas at site A8b (top) and A8c (bottom).

Maintenance Activities for Bioretention	
Activity Schedule	Frequency
• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. • For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and immediately stabilized with grass cover.	As Needed (following construction)
• Prune and weed bioretention area to maintain appearance. • Remove accumulated trash and debris.	Regularly (Monthly)
• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris. • Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
• Remove and replace existing mulch	Every 2 to 3 Years

Site C17/C16: Chemistry Building Quad

Rooftop Disconnection with Bioretention





Parameter	C17a/b	C16
Impervious Cover Treated (acres)	0.51	0.28
Runoff Reduction Volume (cu ft per 1" rain event)	707	115
TN Removal (lb/yr)	6.23	3.46
TP Removal (lb/yr)	0.72	0.4
TSS Removal (lb/yr)	156.7	87.07
Estimated Cost	$18,600	$10,300

Site Description

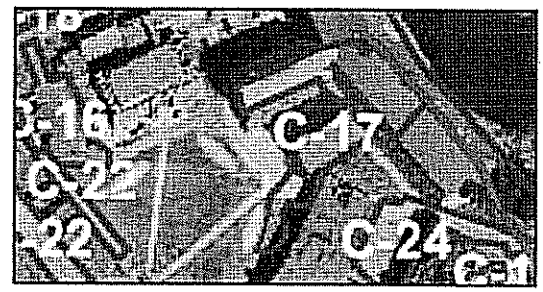
The proposed concept is located on the UConn Campus in a quad area between the Chemistry Building and the Pharmacy/Biology Building. The quad is grassed and contains a few small trees, but otherwise lacks landscaping. Soils are extremely compacted, and several dirt and concrete pathways traverse the area. The perimeter is characterized by bare soils and sediment deposition.

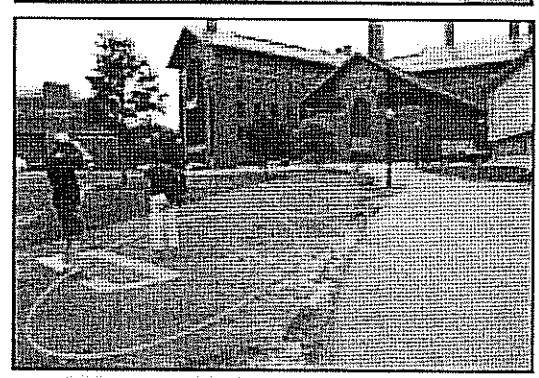
Existing Conditions

Runoff from the Chemistry building rooftop is conveyed underground and into the stormdrain system via external roof drains. Yard drains located in the quad area capture surface runoff from the quad and adjacent impervious areas (paved pathways, driving lanes, and wide sidewalks). On the northwest corner of the quad, runoff from the Life Sciences parking lot is conveyed to an inlet located along the quad. Runoff from these areas is conveyed directly to Eagleville Brook, which is piped deep underneath the quad area, approximately 20-22' below grade.

Proposed Concept

Install three bioretention areas in the quad area to capture rooftop and impervious area runoff. Direct the external roof downspouts from the Chemistry Building to the proposed bioretention areas by





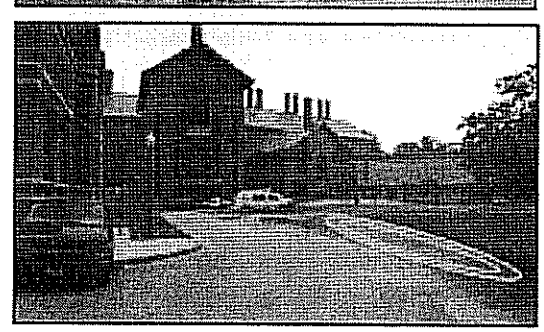


Figure 1. Drainage area (top); External roof drains and proposed retrofit locations for bioretention areas with flowbays in the grassy quad area adjacent to the Chemistry Building (middle), location of C16 (bottom).

installing a new pipe to convey the roof runoff from a portion of the building.

Construct a forebay area at the pipe outlet to dissipate the energy and velocity of the runoff entering the bioretention areas. Runoff from the adjacent impervious areas can enter the bioretention areas via sheetflow. The bioretention areas should have a filter depth of 24 inches and provide 6-9 inches of ponding depth. Due to the compacted nature of the soils, an underdrain is needed for the design. The underdrain and overflow should tie into existing yard drains.

Preliminary Concept Designs

25% concept designs for the proposed retrofit can be found in attachments B. Preliminary plan views and project details are included. These initial plans will need to be further refined as this project proceeds towards construction.

Preliminary Hydrologic Calculations

Preliminary sizing of the bioretention area was completed based on guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the table below.

Sizing Calculations for Site C-17/16		
Parameter	Value	
	C17a/b*	C16
Drainage Area, A (acres)	0.55	0.32
Imperviousness, I (%)	92.8	88.7
Volumetric Runoff Coefficient, Rv	0.89	0.85
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cf)	1767	982
Depth of the Filter Bed, d (ft)	2.50	2.5
Hydraulic Conductivity, k (ft/day)	1	1
Max. Ponding Depth, hmax (in)	9	9
Average Ponding Depth, h (ft)	0.375	0.375
Drawdown Time, t (days)	2	2
Surface Area Required, Af (sq ft)	768	427
Surface Area Provided (sq ft)	1145	500
Treatment Provided (% of 1")	100	29
*now two bioretention areas are combined		

Design Considerations

- There is a building below the quad which may limit the size and extent of concept.
- While utility constraints are expected to be minimal, detailed utility mapping should be obtained before completing the final project design. The main stormdrains are 20-22' below grade and may not constrain the project, however, there may be shallower connection pipes that will need to be avoided.
- This project presents an opportunity for students and faculty at Uconn to be involved in the final design and construction of this project.

Maintenance

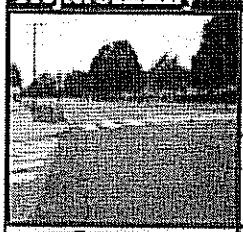
Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

Maintenance Activities for Bioretention	
Activity Schedule	Frequency
• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. • For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and immediately stabilized with grass cover.	As Needed (following construction)
• Prune and weed bioretention area to maintain appearance. • Remove accumulated trash and debris.	Regularly (Monthly)
• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris. • Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
• Remove and replace existing mulch.	Every 2 to 3 Years

Site C-18: North Eagleville Road

Integrating Stormwater, Landscaping, and Traffic Calming Measures

Project Summary



Parameter	C18
Impervious Cover Treated (acres)	1.25 acres
Runoff Reduction Volume (cu ft per 1" rain event)	881
TN Removal (lb/yr)	7.76
TP Removal (lb/yr)	0.9
TSS Removal (lb/yr)	195.25
Estimated Cost	$25,100

Site Description

The proposed retrofit concept is located on the UConn Campus along North Eagleville Road. This road runs through campus and separates Central Campus and Swan Lake from North Campus, several student housing residences, and privately owned churches (Figure 1).

Existing Conditions

Runoff from the crowned roadway drains to catch basins that are located along the edge of the street. The existing roadway is very wide, up to 44 feet from curb to curb in some locations. The University has expressed concern over a dangerous situation with high pedestrian and vehicle traffic along this roadway, and has taken action by painting no driving areas along the edge of the roadway in an attempt to slow car traffic. Some of these areas are used in the project design.

Proposed Concept

In select areas along the edge of the roadway, remove impervious cover and install street planter areas. These areas should contain a perimeter 6" curb and curb cuts installed to direct the roadway runoff into these areas. The planter areas should provide 6 inches of ponding depth as measured from the roadway surface to the low point in the filter surface. The filter media depth should be 6-12 inches deep. An underdrain is needed for the design of each street filter. The underdrain and overflow should tie into the stormwater network.

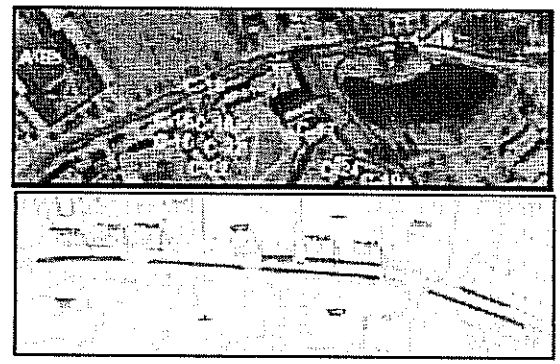


Figure 1. Drainage area (top) and proposed location(s) of street filter designs along North Eagleville Road.

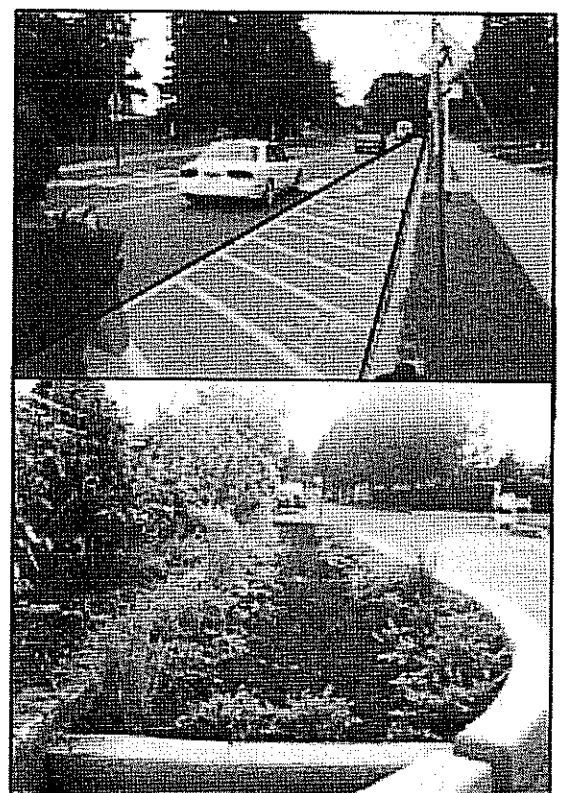


Figure 2. Remove pavement along existing road shoulder to edge of existing curb (top). Example street planters with curb cuts from Portland, OR (bottom).

Preliminary Concept Designs

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will require field survey and more information on drainage pipes, utilities (among other things) before going to construction plans.

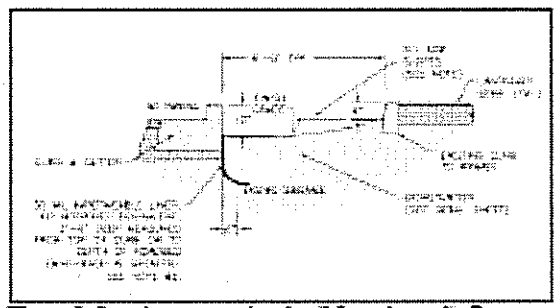


Figure 3. Sample cross section detail from Appendix B.

Preliminary Hydrologic Calculations

Preliminary sizing of the street filter area was completed based on bioretention guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the table below.

Sizing Calculations for Site C-13	
Parameter	Value
Drainage Area, A (acres)	1.25
Imperviousness, I (%)	100
Volumetric Runoff Coefficient, Rv	0.95
Rainfall Depth, P (in)	1
Water Quality Volume, WQv (cf)	4,300
Depth of the Filter Bed, d (ft)	2.50
Hydraulic Conductivity, k (ft/day)	1
Max. Ponding Depth, hmax (in)	6
Average Ponding Depth, h (ft)	0.25
Drawdown Time, t (days)	1
Surface Area Required, Af (sq. ft)	3909
Surface Area Provided (sq ft)	2,000
Treatment Provided (% of 1")	51

Design Considerations

- While utility constraints are expected to be minimal, detailed utility mapping should be obtained before completing the final project design.
- At cross walk areas, pedestrian bridges can be incorporated into the design so that people can cross over the street filter area.
- Current concept design sets a 24' road width, uniform along Eagleville rd. Wider road (and bike lanes) can be obtained by either narrowing the filters themselves or expanding into the sidewalk.
- Designs can serve to calm traffic along the roadway. This project should be integrated with University efforts to calm traffic along the road and also with the Sasaki Landscape Plan.

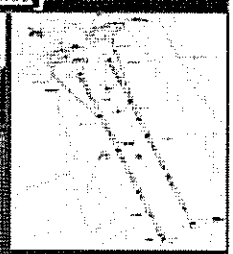
Maintenance

Maintenance is important for these street filter areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

Maintenance Activities for Site C-13	
Activity Schedule	Frequency
• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. • For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the street filter area, and make sure they are immediately stabilized. • Trim trees to prevent line of sight issues.	As Needed (following construction)
• Prune and weed the filter area to maintain appearance. • Remove accumulated trash and debris.	Regularly (Monthly)
• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris. • Inspect filter area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
• Remove and replace existing mulch.	Every 2 to 3 Years

Site A-11: Lot 9

Parking Lot Bioretention

Project Summary	
	
Parameter	***A11a-d***
Impervious Cover Treated (acres)	1.39 acres
Runoff Reduction Volume (cu ft per 1" rain event)	1,538 cf
TN Removal (lb/yr)	16.02 lb/yr
TP Removal (lb/yr)	1.90 lb/yr
TSS Removal (lb/yr)	406.61 lb/yr
Estimated Cost	$52,700

Site Description

The proposed retrofit concept is located on the UConn Campus in Lot 9, across from the Visitors Center. The parking lot is heavily used, and in relatively poor condition.

Existing Conditions

Runoff from the site is captured in an enclosed storm drain system, and conveyed to the north. Small landscaped areas to the north receive no drainage from the lot or other impervious areas.

Proposed Concept

Install linear bioretention areas (grassed swales) in medians between existing parking areas. Convey stormwater to these swales using curb cuts. Install 6" check dams along the swale. Existing storm drain structures will act as overflow for large storm events.

Construct two small bioretention cells in the existing landscaped areas. Use curb cuts to receive direct parking lot runoff. In addition, capture small storm runoff from swales in the median via a 6" dip within the swale. Yard drains in these structures will be tied in to existing storm drain structures in the road.

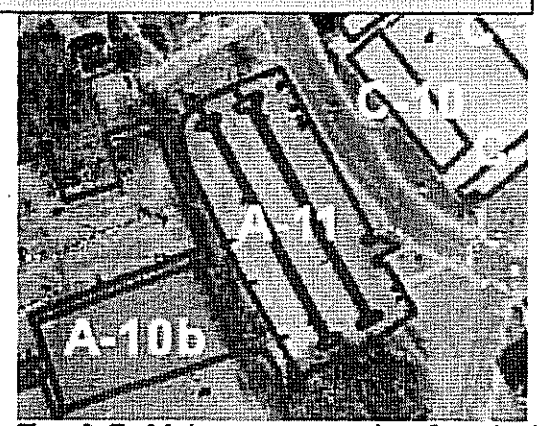
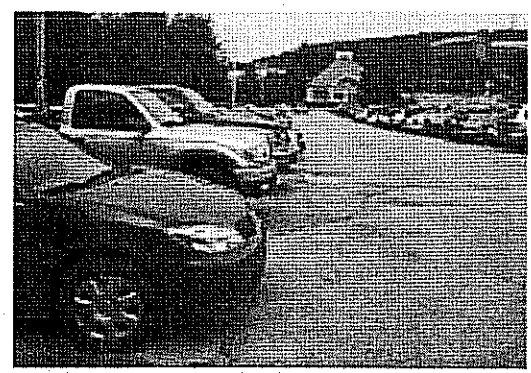
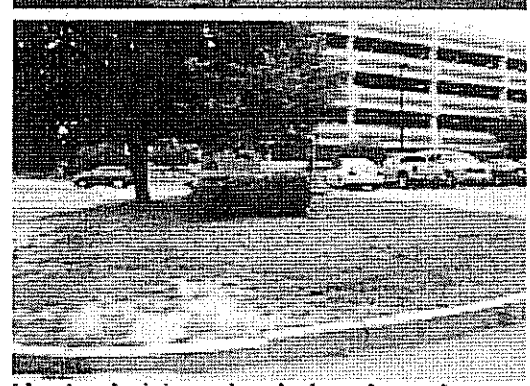


Figure 1. Total drainage area to proposed retrofit practices in Lot 9.

Figure 2. Current parking configuration looking north.





(above), and existing northeast landscaped area to be converted to bioretention (below).

Preliminary Concept Designs

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will need to be further refined as this project proceeds towards construction.

Preliminary Hydrologic Calculations
Preliminary sizing of the bioretention area was completed based on guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the following table.

Sizing Calculations for Site A11		
Parameter	Value*	
	A-11c/d (Swales)	A-11a/b (Bio)
Drainage Area, A (acres)	1.41	1.41
Imperviousness, I (%)	96	96
Volumetric Runoff Coefficient, Rv	0.93	0.93
Rainfall Depth , P (in)	1	1
Water Quality Volume, WQv (cf)	4,790	4,790
Depth of the Filter Bed, d (ft)	–	2.5
Bottom width (ft)	2	–
Side slopes	3:1	–
Hydraulic Conductivity, k (ft/day)	–	1
Drawdown Time, t (days)	–	2
Max. Ponding Depth, hmax (in)	–	9
Average Ponding Depth, h (ft)	0.5	0.375
Cross-Sectional Area (ft)	1.75	–
Length Required (ft)	*2,740*	–
Length Provided (ft)	650	–
Surface Area Required, Af (sq ft)	–	1,495
Surface Area Provided (sq ft)	–	1,550
Treatment Provided (% of I")	24	75
*Note: Table summarizes total length of both swales and bios		

Design Considerations
Some key design considerations include the following:

- Confirm location of underground electric lines at northeast filter area.
- The proposed filters will require a parking lot reconfiguration. Angled parking, combined with one-way traffic, may be needed to accommodate these swales.
- Available mapping does not indicate how storm drainage from the parking lot connects to the storm drain network in the street and needs to be field-verified.
- The Sasaki Landscaping Plan indicates that tree plantings at the eastern edge of Lot 9 may reduce the lot size. This design does not account for that parking lot loss. An alternative design may utilize only one swale, or an alternative to parking lot swales, such as parking lot tree planters.

Maintenance
Maintenance is important for bioretention areas and grassed swales. The routine maintenance activities typically associated with bioretention areas are summarized in the following tables below.

Maintenance Activities for Site A-11	
Activity Schedule	Frequency
• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. • For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half- inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.	As Needed (following construction)
• Prune and weed bioretention area to maintain appearance. • Remove accumulated trash and debris.	Regularly (Monthly)
• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris. • Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
• Remove and replace existing mulch.	Every 2 to 3 Years

Site B5: Parking Lot Y

Managing Parking Lots with Bioswales

Project Summary

Parameter	B5a	B5b
Impervious Cover Treated (acres)	1.32	0.5
Runoff Reduction Volume (cu ft per 1" rain event)	2,485	1,044
TN Removal (lb/yr)	14.6	6.13
TP Removal (lb/yr)	1.69	0.71
TSS Removal (lb/yr)	367.15	154.29
Estimated Cost	$43,300	$18,300

Site Description

The proposed retrofit sites are located in the grassed area along the western edge of Parking Lot Y on the UConn campus. The Y Lot is a large parking lot (upper lot) currently draining to existing inlets that discharge toward Lot 8 then, ultimately, towards Site B3 (proposed gravel based wetland).

Existing Conditions

The entire lot (2.2 acres) drains towards the western edge of the parking area to one of two inlets along the curb (~1.8 impervious acres). These inlets convey stormwater northward to an underground detention pipe system with an offline Vortechnic device (WQ Unit) in Lot 8.* Snow storage for Lot Y is over the hill and results in large sand deposits beyond the parking lot edge.

**Lot 8 surface drainage appears to bypass inlets at low end of parking lot, likely contributing to slope damage of reinforced slope.*

Proposed Concept

Remove existing curb at each side of double inlets and install paved flumes to allow surface drainage from parking lot to enter forebays of two bioretention cells excavated in existing grassed areas (Sites A and B, Figure 1). Install curb cuts/paved flumes at other strategic locations to better distribute runoff into practices (Figure 2). Bioretention designed with sediment forebays, underdrains, and an overflow mechanism back into existing inlets (Figure 3).

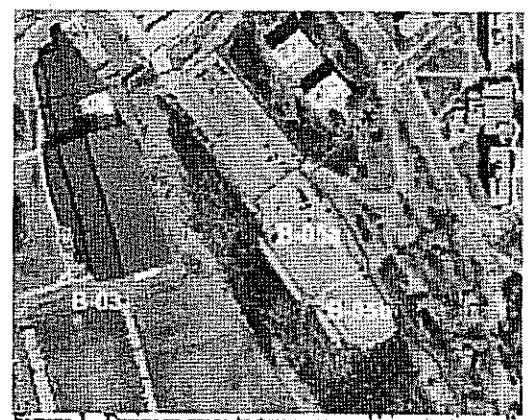


Figure 1. Drainage areas to two proposed bioretention cells.

Figure 2. Proposed location of bioretention/swale system in grassed edge of Parking Lot Y. Curb cuts allow inflow to forebays at strategic locations along system.

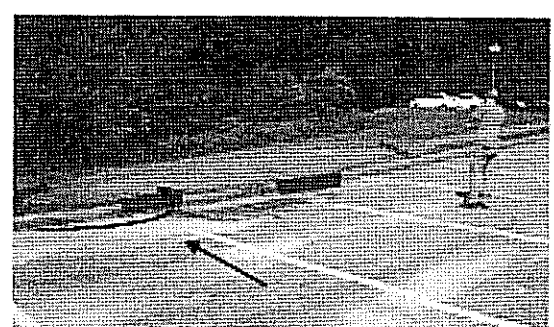


Figure 3. Remove curb along sides of double inlets to allow surface runoff into bioretention area through paved flume with riprap channel. Primary overflow where ponded water "backs up" into existing inlet (blue arrow).

Emergency spillways provided (into wooded area). Use shallow swales along full length of parking lot to convey flow to bioretention. Use riprap channels to convey runoff from curb cuts/paved flume to small pretreatment forebays and to dissipate the energy and velocity of runoff. Existing inlet acts as primary overflow and emergency spillway provided for overflow into wooded slope. The bioretention areas should have a filter depth of 24 inches and provide 6-9 inches of ponding depth. Due to the compacted nature of the soils, include an underdrain that ties back into the existing drains.

Preliminary Concept Designs

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will require field survey and more information on drainage pipes, utilities, and soils (among other things) before going to construction plans.

Preliminary Hydrologic Calculations

Preliminary sizing of the bioretention area was completed based on guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the table below.

Parameter	Value	
	B5a	B5b
Drainage Area, A (acres)	1.5	0.6
Imperviousness, I (%)	85	77
Volumetric Runoff Coefficient, Rv	0.82	0.74
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cf)	4591	1749
Depth of the Filter Bed, d (ft)	2.50	2.50
Hydraulic Conductivity, k (ft/day)	1	1
Max. Ponding Depth, hmax (in)	9	9
Average Ponding Depth, h (ft)	0.375	0.375
Drawdown Time, t (days)	2	2
Surface Area Required, Af (sq. ft)	1966	757
Surface Area Provided (sq ft)	1800	1500
Treatment Provided (% of I)	90	100

Design Considerations

- A retrofit of the Y Lot would help reduce the volume ultimately discharging to Site B-3.
- Possible conflict with electric cables and existing light pole(s).
- Compare feasibility of various design alternatives for raising existing inlet structures.
- Incorporate educational signage.

Maintenance

Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

Activity Schedule	Frequency
• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. • For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.	As Needed (following construction)
• Prune and weed bioretention area to maintain appearance. • Remove accumulated trash and debris.	Regularly (bi-monthly)
• Inspect inflow areas/forebays for sediment accumulation and remove any accumulated sediment or debris. • Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
• Remove and replace existing mulch.	Every 2 to 3 Years

Cost Considerations

Added costs if new overflow inlets are required; relocation of electrical lighting a possibility.

Site B3: Christian Field/Batting Cages

Gravel-based Wetland Systems

Project Summary

Parameter	B3
Impervious Cover Treated (acres)	15.1 acres
Runoff Reduction Volume (cu ft per 1" rain event)	0
TN Removal (lb/yr)	49.19
TP Removal (lb/yr)	13.28
TSS Removal (lb/yr)	2,362.73
Estimated Cost	$250,100

Site Description

The proposed retrofit concept is located by the baseball fields and batting cages in the southeastern portion of the UConn Campus.

Existing Conditions

Existing drainage pipe system collects runoff from pervious and impervious surfaces for 55 acre drainage area and discharges into Red Brook (Figure 1). Existing 24 inch pipe runs along open field areas with inlets, likely under baseball field and across Stadium Road. Some of this area is currently managed by upgradient stormwater BMPs. Because a portion of this conveyance appears to have been a former stream, there is likely a shallow depth to groundwater. The location of inlets or manholes in the vicinity of the site were not found. The pipe invert at the outfall is less than 5 feet.

Proposed Concept

Proposed installation of a gravel based wetland system with forebay, designed offline with approximately 5,050 sq ft of available surface area (Figure 2). Use a diversion manhole to divert flows from existing drain line into pretreatment forebay with outlet structure that discharges into bottom of chambered, gravel wetland system. Flows are forced up through gravel filters to a vegetated wetland surface where additional pollutants can be removed via plant uptake. Overflow from the wetland is discharged back into existing stormdrain. An emergency spillway drains into existing low area/wetland to the southwest.

This project is feasible and very attractive, as few locations on campus offer the ability to manage significant volumes of runoff and impervious surfaces. Available surface area limits available treatment capability; however additional retrofit projects in the drainage area (i.e. B5a/b) may help reduce sizing requirements.

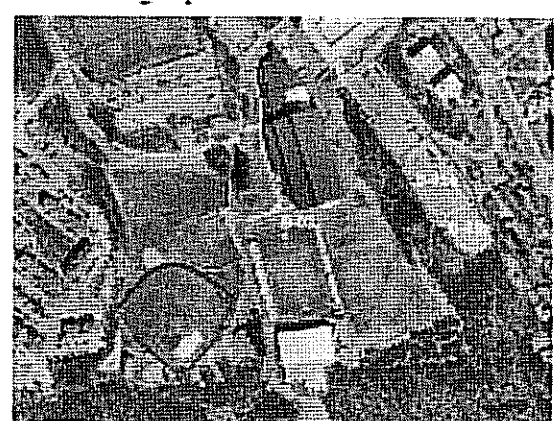


Figure 1. Drainage areas to proposed gravel wetland system includes additional proposed retrofits.

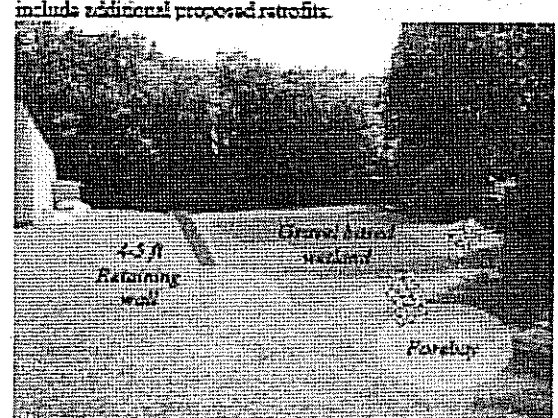


Figure 2. Gravel based wetland system with underground chambers, pretreatment sediment forebay, and retaining wall.

Preliminary Concept Designs

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections, and project details (Figure 3). These initial plans will require field survey and more information on drainage pipes, utilities, and soils (among other things) before going to construction plans.

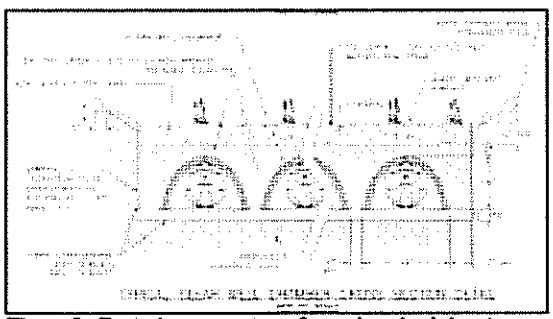


Figure 3. Typical cross section of gravel wetland showing underground storage chambers and vegetated surface where water pushed up from below is designed to pond.

Preliminary Hydrologic Calculations

Preliminary sizing of the gravel based wetland system was completed based on guidance provided in the *2009 Rhode Island Stormwater Manual (public review draft)* and are summarized in the table below.

Sizing calculations for Site B3	
Parameter	Value
Drainage Area, A (acres)	55.0
Imperviousness, I (%)	27
Volumetric Runoff Coefficient, Rv	0.30
Rainfall Depth, P (in)	
Water Quality Volume, WQv (cf)	59,343
Surface Area Required, Af (sq. ft)	8,386
Surface Area Provided (sq ft)	5,050
Treatment Provided (% of I")	60

Design Considerations

- Sizing of facility is constrained by space and grade. Note the height of retaining wall, depth of forebay, and available head driving upflow filter. Sizing of facility can potentially be reduced if additional retrofits are installed within the drainage area upgradient.
- Must verify location of all existing storm drain infrastructure. Double check potential utility conflicts (i.e., sewerline).
- Final design to include cleanouts for gravel wetland and maintenance access for forebay.
- May need to relocate existing fence and install guardrail along road.

Maintenance

Maintenance will generally be related to landscaping practices and sediment removal from pretreatment forebay to prevent clogging. Inspect semi-annually for the first year of operation and annually after the first year as well as after major storm events. The routine maintenance activities typically associated with gravel-based wetlands are summarized in the table below.

Maintenance Activities	
Activity	Schedule
• Replant vegetation to original design standards if less than 50% of the original vegetation is established	After two years
• Remove and replace ill-established, dead, or severely diseased plants	Annual
• Inlets, outlets, and overflow spillway will be checked for blockage, structural integrity, and evidence of erosion • Sediment build up at the cleanout pipe will be removed	Routinely and after major storm events
• Clean and remove debris at cleanout pipe • Sub-surface storage chambers shall be flushed and/or snaked	As needed (if standing water is observed 48 hours after storm event)

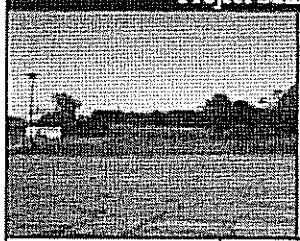
Cost Considerations

$30/sf, not including utility/ main drainage pipe relocation.

Site B11: Parking Lot W

Managing Parking Lots with Bioretention

Project Summary



Parameter	B11a	B11b	B11c	B11d
Impervious Cover Treated (acres)	0.86	1.38	1.02	0.92
Runoff Reduction Volume (cu ft per 1" rain event)	1,553	1,864	1,932	1,916
TN Removal (lb/yr)	9.12	10.93	11.33	11.25
TP Removal (lb/yr)	1.06	1.27	1.32	1.31
TSS Removal (lb/yr)	229.5	275.4	285.5	283.1
Estimated Cost	$27k	$33k	$34k	$34k

Site Description

The proposed retrofit concepts are located in Parking Lot W in the northern portion of UConn campus near the reservoir and Greek Housing area. This large parking lot is showing signs of decay and is, reportedly, underused.

Existing Conditions

The upper northwest and eastern portions of the parking lot drain out of the watershed. The remaining portions of the lot (~ 6 acres) are divided into four separate catchments that drain to surface inlets. There are currently no stormwater practices treating the runoff. Soils at this site appear suitable for infiltration.

Proposed Concept

Concepts to use bioretention facilities to capture and treat runoff from the four drainage areas:

Area A: Block inlets and use curb cuts/sidewalk cross drains to direct runoff into forebay and bioretention area. Shape cell to avoid existing trees. Overflow to manage/treat drainage area of approximately 1 acre. Underdrain and outlet overflow back into existing stormdrain.

Area B: Remove pavement to install a 5 ft wide bioretention to manage/treat parking lot and upslope pervious area of approximately 2.6 acres. Restripe parking area, bioretention located in island between travel lanes as shown on sketch; no pretreatment, stone check dams.

Area C: Grass channel and/or forebay for pre-treatment flowing into bioretention along edge of lot. Convert existing inlet to manhole at low point, provide positive drainage to grass channel/forebay flowing into bioretention. Overflow via rip rap spillway back into existing drainage feature.

Area D: Block existing inlet and divert runoff to bioretention area via curb cuts/paved flume into forebay then into bioretention. Overflow ties back into existing drainage inlet. No underdrain required. May need to relocate existing electric lines.

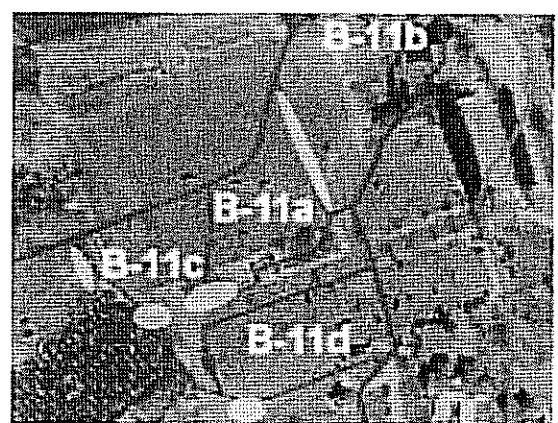


Figure 1. Location of proposed bioretention cells. Two portions of lot drain out of the Eagleville Brook watershed (outside of pink line).

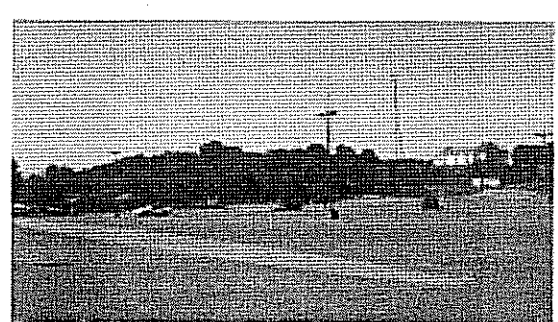


Figure 2. Approximate location of proposed bioretention cells in parking lot. Restriping of lot will be required around landscape island bioretention to alter current traffic flow patterns. Loss of only four or five spaces anticipated.

Preliminary Concept Designs
25% concept designs for proposed retrofits can be found in attachment B, which includes preliminary plan views and project details. These initial plans will require field survey and more information on drainage pipes, utilities, and soils (among other things) before going to construction plans.

Preliminary Hydrologic Calculations
Preliminary sizing of the bioretention area was completed based on guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the table below.

Parameter	Value			
	A	B	C	D
Drainage Area, A (acres)	0.98	2.57	1.38	1.09
Imperviousness, I (%)	88	54	74	84
Volumetric Runoff Coefficient, Rv	0.84	0.53	0.72	0.81
Rainfall Depth, P (in)	1	1	1	1
Water Quality Volume, WQv (cf)	2872	4962	3598	3393
Depth of the Filter Bed, d (ft)	2.50	2.50	2.50	2.50
Hydraulic Conductivity, k (ft/day)	1	1	1	1
Max. Ponding Depth, hmax (in)	9	9	9	9
Average Ponding Depth, h (ft)	0.375	0.375	0.375	0.375
Drawdown Time, t (days)	2	2	2	2
Surface Area Required, Af (sq. ft)	1292	2157	1564	1389
Surface Area Provided (sq ft)	1125	1350	1400	2200
Treatment Provided (% of 1")	87	63	90	100

Design Considerations
- Existing water lines and drainage pipes at site A to be verified in order to finalize location of inlet and determine if culvert under access road is required.
- Try to protect existing trees during excavation.
- At Site B, the only location for bioretention is island constructed between travel lanes, most runoff will enter in the upper portion, so provide forebay in first cell, may require check dams to terrace facility. Raise existing inlets to act as overflow.
- Design and excavation of bioretention and inlet structures at site C to save large tree.
- Feasible and likely cost effective, though site B is undersized given contributing watershed.
- No significant loss of parking spaces, though lot will need to be restriped.

Maintenance
Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

Activity Schedule	Frequency
* Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. * For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.	As Needed (following construction)
* Prune and weed bioretention area to maintain appearance. * Remove accumulated trash and debris.	Regularly (Monthly)
* Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris. * Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
* Remove and replace existing mulch	Every 2 to 3 Years

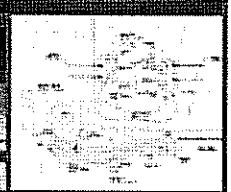
Other Considerations

It was reported that a stormwater master plan has been proposed that will divert stormwater from this area to Swan Lake, and ultimately out of the watershed.

Site C4/5: Education/Gentry Buildings and Sundial Garden

Integrating Stormwater and Landscape Management

Project Summary



Parameter	C4/5-a	C4/5-d	C4/5-e
Impervious Cover Treated (acres)	0.12	0.07	0.34
Runoff Reduction Volume (cu ft per 1" rain event)	162	101	474
TN Removal (lb/yr)	1.42	0.89	4.17
TP Removal (lb/yr)	0.16	0.1	0.48
TSS Removal (lb/yr)	35.73	22.35	104.98
Estimated Cost	$11,000	$3,000	$13,000

Site Description

The proposed retrofit concept is located on the UCcem Campus at the Education and Gentry Buildings. These two buildings are mirrored in design, and are separated by the Sundial Garden quad area.

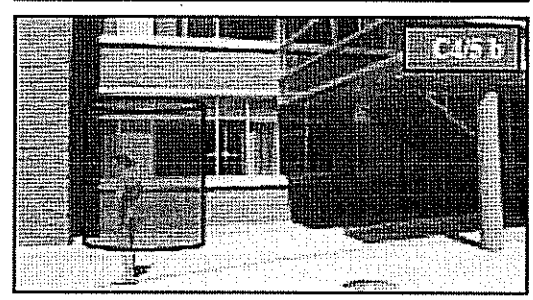
Existing Conditions

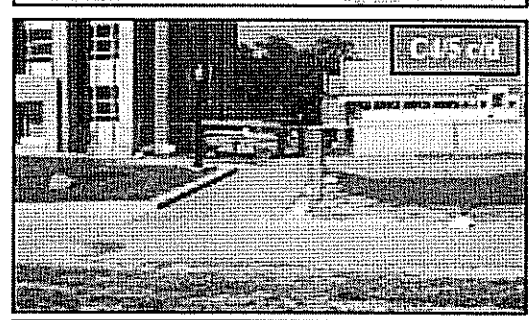
The roof leaders from both buildings are directly connected to the stormdrain system. The adjacent green space in the Sundial Garden is highly compacted. Across the walkway in the student center quad, the soils are somewhat compacted. Several areas of localized soil erosion were noted.

Proposed Concept

Several retrofit opportunities were identified at each building (Figure 1). The locations of these projects are shown in attachment B:

- C4/5 (a) – Direct the front roof leaders into raised stormwater planter beds.
- C4/5 (b) – Direct the two downspouts near the main building entrance into cisterns. Water from the cistern can be used to water the building landscaping.
- C4/5 (c) – Amend the soils to restore the pervious area in the Sundial Garden and plant trees and a vegetative buffer along the southwest edge of the garden to reduce runoff and soil erosion.
- C4/5 (d) – Direct the two downspouts above the building side entrance into a bioretention area in the Sundial Garden. These bioretention areas can be incorporated into additional landscaping plans for this Garden.
- C4/5 (e) – Construct a large linear bioretention area along the walkway. Divert the walkway and terrace runoff into the area using berms or trench drains.





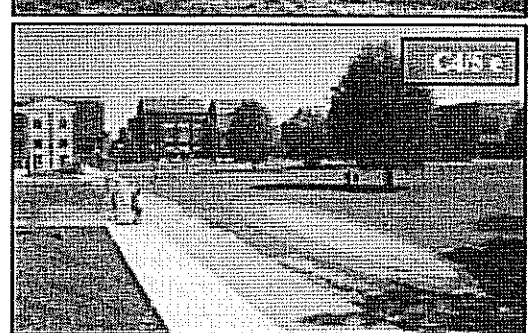


Figure 1. (C4/5-a) Potential location for stormwater planter boxes. (C4/5-b) Potential location for a cistern. (C4/5-c/d) Compaction in the Sundial Garden area and the proposed location of soil amendment and bioretention. (C4/5-e) Proposed location of larger bioretention project.

Preliminary Concept Designs

25% concept designs for the proposed retrofits can be found in attachment B. Preliminary plan views and project details are included. These initial plans will need to be further refined as this project proceeds towards construction.

Preliminary Hydrologic Calculations

Preliminary sizing of the bioretention areas was completed based on guidance provided in the *2004 Connecticut Stormwater Quality Manual*. These computations are summarized in the table below.

Parameter	Value		
	C4/5-a*	C4/5-d*	C4/5-e
Drainage Area, A (acres)	0.12	0.07	0.47
Imperviousness, I (%)	100	100	72
Volumetric Runoff Coefficient, Rv	0.95	0.95	0.70
Rainfall Depth, P (in)	1	1	1
Water Quality Volume, WQv (cf)	403	251	1384
Depth of the Filter Bed, d (ft)	2.5	2.5	2.50
Hydraulic Conductivity, k (ft/day)	1	1	1
Max. Ponding Depth, hmax (in)	3	9	6
Average Ponding Depth, h (ft)	0.125	0.375	0.25
Drawdown Time, t (days)	1	2	2
Surface Area Required, Af (sq. ft)	384	113	538
Surface Area Provided (sq ft)	400	1005	1,215
Treatment Provided (% of I")	100	100	100

*note, planters and sundial garden practices combined

Design Considerations

- Site soils are compacted, so underdrains are needed in the bioretention and planter box designs.
- While utility constraints are expected to be minimal, detailed utility mapping should be obtained before completing the final project design.
- Construction of a new building being planned for a nearby site in the student center quad area may affect the project design for concept C4/5 (e). Therefore, the construction of project C4/5 (e) should not occur until after the new building is constructed.
- Projects (b) and (d) are good opportunities for student involvement and education. Students and faculty at Uconn can be involved in the final design and construction of this project.
- The Sasaki landscape architecture company has developed a landscaping plan for the Sundial Garden area. These plans can be incorporated with the proposed stormwater and soil amendment projects into a final design for this area.

Maintenance

Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention/planter boxes areas are summarized in the table below.

Activity Schedule	Frequency
• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. • For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas, and make sure they are immediately stabilized.	As Needed (following construction)
• Prune and weed bioretention area to maintain appearance. • Remove accumulated trash/debris.	Regularly (Monthly)
• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris. • Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
• Remove and replace existing mulch.	Every 2 to 3 Years

APPENDIX C. Summary of LID Implementation to Date on UConn Campus.

Implementation of LID practices has been underway for several years on the UConn campus. In 2004, the first biroretention area on campus was installed near the Towers dorms (Figure 5). In 2005, several more bioretention areas were installed at the Burton-Shenkman facilty (Figure 6), and at Hilltop dorms (Figure 7). In August 2010, several large bioretention areas were installed at Northwoods apartments as part of a site renovation (Figure 8). Smaller rain gardens were also installed at each of the buildings at the Northwoods complex.

Installation of pervious pavement began in 2005 with a small patio using EcoStone® pavers at Lakeside apartments (Figure 9). Larger installations continued in 2009 with a pervious asphalt lot near Towers dorms (Figure 10), and a pervious concrete installation near the field house (Figure 11). In 2010, a portion of the access road to Northwoods apartments was paved with pervious asphalt (Figure 12).

In 2009, a green roof was installed on math science building Gant Plaza (Figure 13). Funding for this demonstration and research effort was obtained from CT DEP Section 319.

More information on all of these projects can be found on the TMDL project website at http://clear.uconn.edu/projects/tmdl/progress.htm.

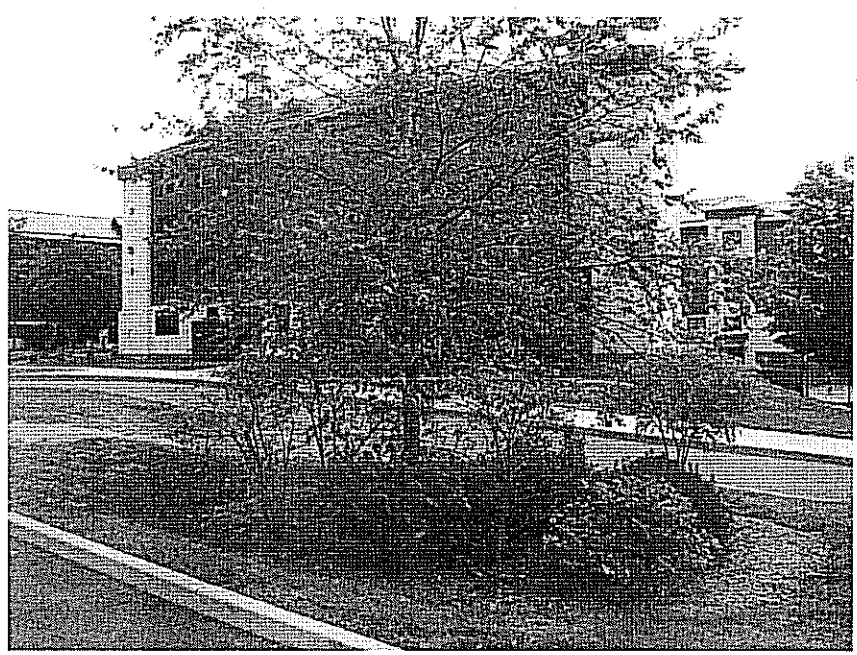


Figure 5. Bioretention by Towers dorms.

Figure 6. Bioretention at Burton-Shenkman facility.

Figure 7. Bioretention by Hilltop dorms.

Figure 8. Bioretention at Northwoods apartments.

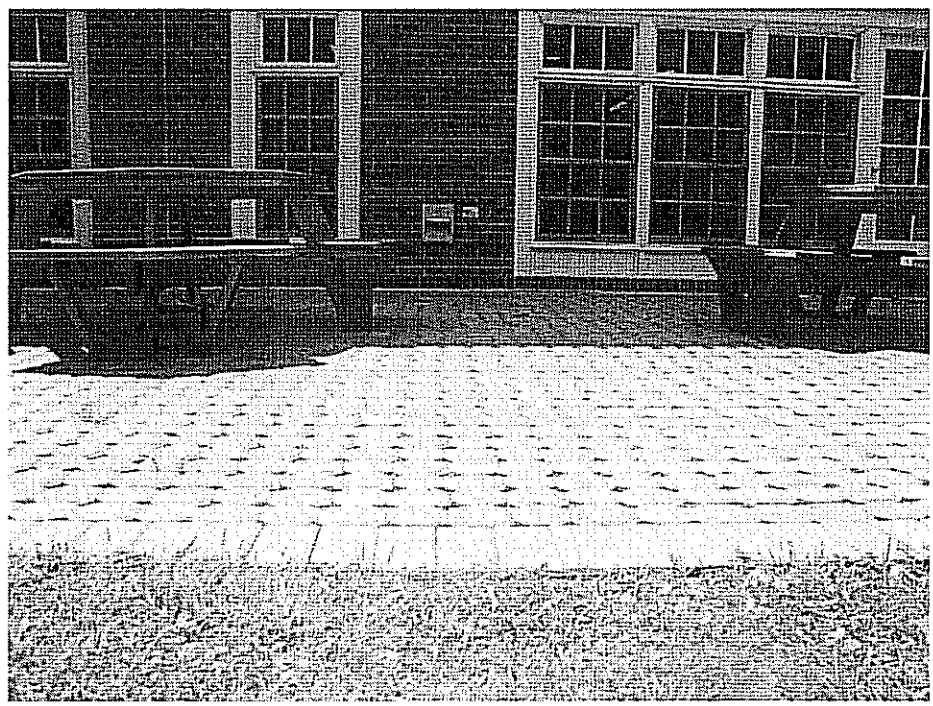


Figure 9. Pervious pavers at Lakeside Apartments.

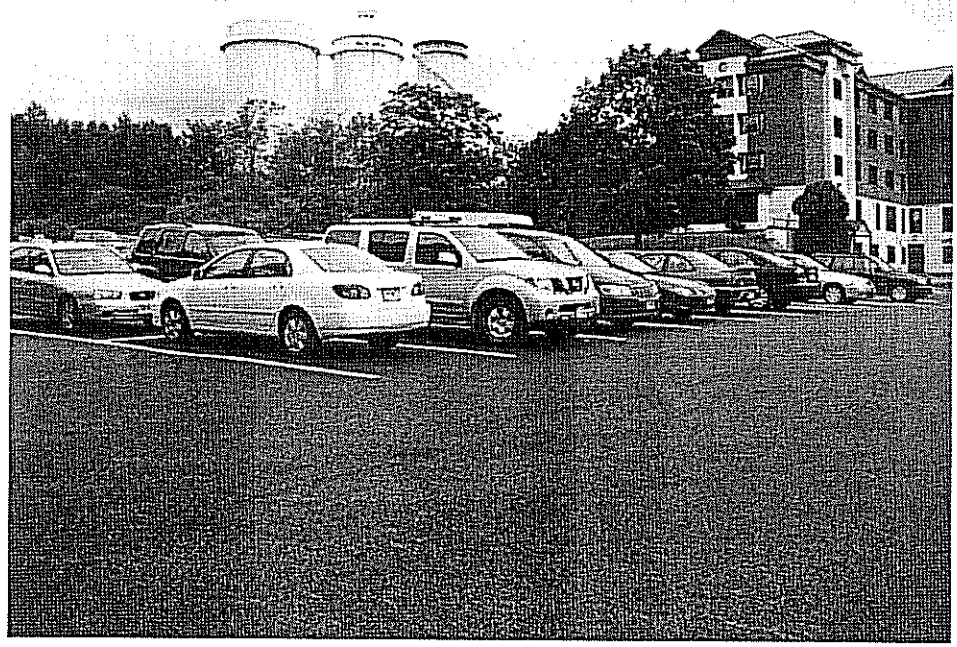


Figure 10. Pervious asphalt near Towers dorms.

Figure 11. Pervious concrete in front of field house.

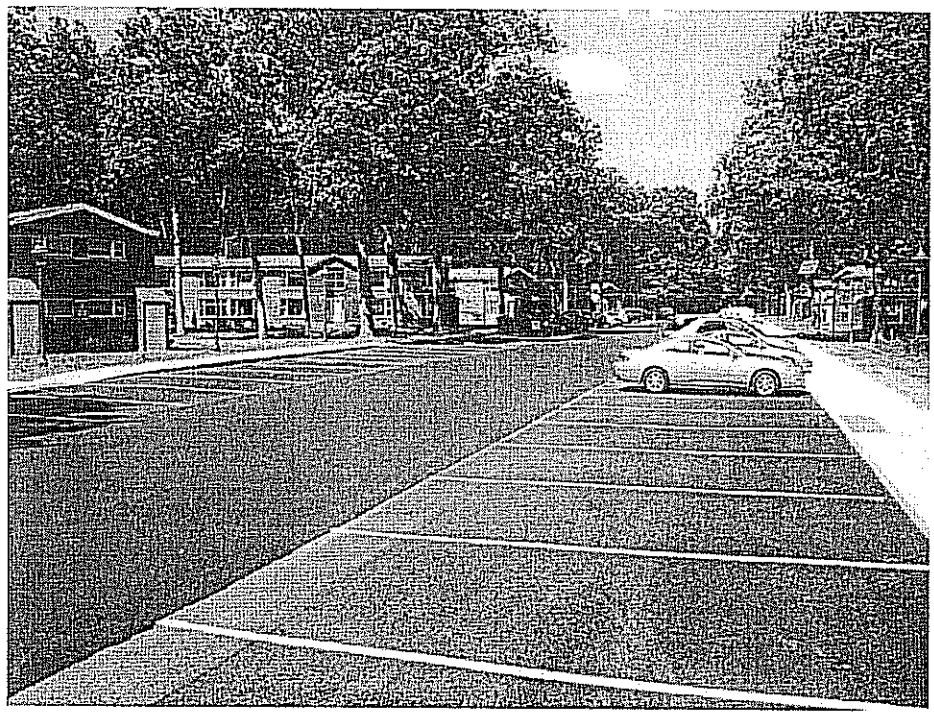


Figure 12. Pervious asphalt at Northwoods apartments.

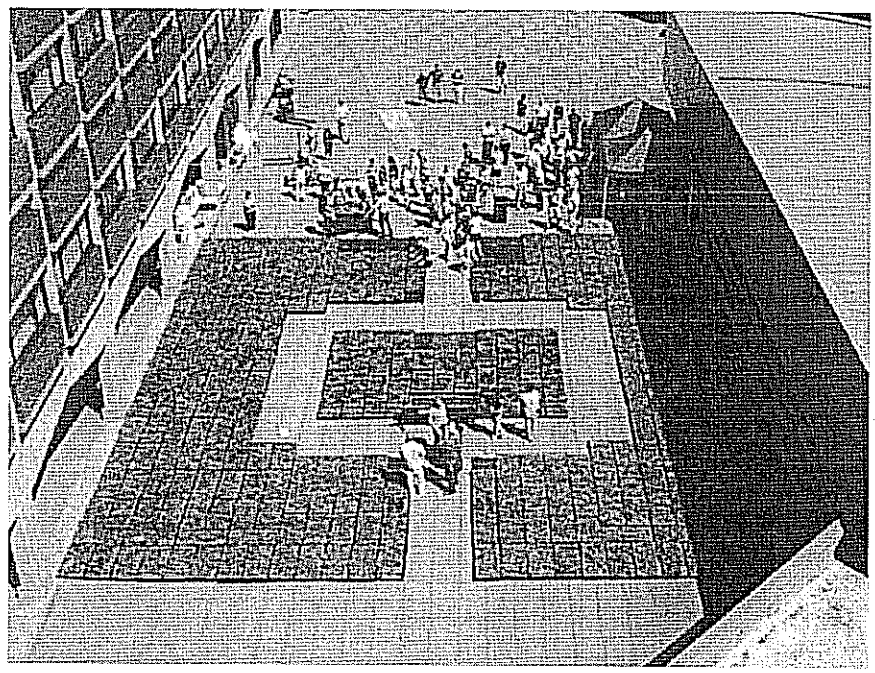


Figure 13. Green roof on Gant Plaza.

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Mansfield Open Space Preservation Committee
DRAFT Minutes of June 21, 2011 meeting

Members present: Jim Morrow (chair), Quentin Kessel, Vicky Wetherell, Ken Feathers, Jennifer Kaufman (staff).

1. Meeting was called to order at 7:40.

2. Vicky was appointed acting secretary.

3. Minutes of the May 17, 2011 meeting were approved.

4. **Old Business**

- The committee went into executive session at 7:55 and came out of executive session at 8:05.

- The committee continued discussion of possible open space initiatives.

5: **New Business**

The committee reviewed the committee's 2010 annual report and made updates for the 2011 annual report.

6. Meeting adjourned at 9:20.

7. Next meeting on July19, 2011.

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MINUTES
MANSFIELD PLANNING AND ZONING COMMISSION
Regular Meeting
Monday, June 6, 2011
Council Chamber, Audrey P. Beck Municipal Building

Members present:	R. Favretti (Chairman), M. Beal, J. Goodwin, R. Hall, K. Holt, B. Ryan
Members absent:	G. Lewis, P. Plante, B. Pociask
Alternates present:	F. Loxsom, K. Rawn, V. Ward
Staff Present:	Gregory J. Padick, Director of Planning, Curt Hirsch, Zoning Agent

Chairman Favretti called the meeting to order at 7:55 p.m. He appointed alternates Ward, Rawn and Loxsom to act in members' absence.

Minutes:
05-16-11- Hall MOVED, Ward seconded, to approve the 5/16/11 minutes as written. MOTION PASSED with all in favor except Loxsom who disqualified himself.

Zoning Agent's Report:
Noted.

Public Hearing:
Gravel Permit Renewals: Banis property on Pleasant Valley Road File #1164; Hall property on Old Mansfield Hollow Road File #910-2; Green Property, 1090 Stafford Road PZC File #1258
Chairman Favretti opened the Public Hearing at 7:57 p.m. Members present were Favretti, Beal, Goodwin, Hall, Holt, Ryan and alternates Loxsom, Rawn, Ward. Favretti appointed alternates Loxsom, Rawn and Ward to act. Gregory Padick, Director of Planning, read the legal notice as it appeared in the Chronicle on 5/21/11 and 6/1/11, and noted a 6/2/10 memo from C. Hirsch, Zoning Agent.

Banis Property: Steven Banis addressed the complaint that work was being conducted on Sunday which is against the conditions of the permit. He explained that no work in conjunction with the gravel operation has occurred on Sundays, but noted that the noise heard may have been from him cutting hay with the tractor in Area 2. He also noted that a nearby parcel is being logged and field stone is being removed and the noise coming from that operation might be confused with noise from his property. Banis stated that there has been no change in equipment or plans, and he is still working in Area 3.

Hall Property: Ed Hall requested a modification to his existing permit, noting that he is almost finished excavating in the section now being worked. He is requesting the Special Permit for the Eric Hall site be discontinued. He would like to relocate onto the work/farm road, using a small section of the northeastern portion of his newly acquired property. He said that there will be no visual impact on the neighbors and submitted a letter from property abutter S. Dunstan who has no objections to the request.

Green Property: Hirsch noted that there has been no activity or change at this site and suggested excluding this site from the Field Trip.

Public Comment on Banis:
Marty Schwartz, 69 Pleasant Valley Road, expressed concern about: the noise directly behind his house, run-off to the wetlands possibly containing pesticides, blasting, and he wondered how much longer the disturbance will continue.
Richard Woodworth, 60 Woods Road, expressed concern regarding the noise of metal scraping on rocks and from blasting. He noted that this is a residential area and it is not peaceful when a commercial operation is running 6 days a week. The noise and disturbance have gone on for many years, and it is time to stop.

R. Hall questioned notification regarding blasting. Hirsch noted that it is an approval condition and the State regulates blasting, but he would check with Fire Marshal for notification requirements.

Favretti noted no further comments from the Public or Commission. Hall MOVED, Rawn seconded, to continue the Public Hearing on 6/20/11 and add Banis and Hall to the Field Trip agenda on 6/15/11. MOTION PASSED UNANIMOUSLY.

Public Hearing:
Application to amend the Zoning Regulation to add Place of Assembly-Banquet Hall as a permitted use in the Neighborhood Business 2 Zone, M. Healy, applicant, PZC File #1301
Chairman Favretti opened the Public Hearing at 8:15 p.m. Members present were Favretti, Beal, Goodwin, Hall, Holt, Ryan and alternates Loxsom, Rawn, Ward. Favretti appointed alternates Loxsom, Rawn and Ward to act. Gregory Padick, Director of Planning, read the legal notice as it appeared in the Chronicle on 5/21/11 and 6/1/11 and noted a 6/1/10 report from G. Padick, Director of Planning.

Michael Healy, owner/applicant, reviewed the proposal to add "Place of Assembly-Banquet Hall" as a permitted use in the Neighborhood Business 2 Zone. He depicted on a map the other locations this change could affect and noted that any application would still be subject to Special Permit criteria and approval processes.

Goodwin asked Healy how many people the barn on his property could potentially accommodate. Healy indicated approximately 200 people. Holt then asked about parking, and the response was that some parking would be accommodated on-site, and some on neighboring sites using a shuttle service for the more distant locations. Goodwin asked Padick if there were current regulations about limiting building size and footprint in this Neighborhood Business 2 Zone.

Favretti noted no further comments from the Public or Commission. Beal MOVED, Holt seconded, to close the Public Hearing at 8:30 p.m. MOTION PASSED UNANIMOUSLY.

Public Hearing:
4-Lot Subdivision Application, (3 New Lots) Wormwood Hill & Gurleyville Roads, S. Plimpton o/a, PZC File #1298
Chairman Favretti opened the continued Public Hearing at 8:41 p.m. Members present were Favretti, Beal, Goodwin, Hall, Holt, Ryan and alternates Loxsom, Rawn and Ward, who were all appointed to act. Padick noted in addition to revised plans dated 5/25/11, the following communications were received and distributed to the Commission: a 6/2/11 report from the Director of Planning and a 6/1/11 report from the Assistant Town Engineer.

Douglas Bonoff, Land Surveyor; Paul Biscutti, Engineer; and Kim Bradley, Ecologist, were present representing the applicant. Bonoff agreed that the testimony presented at the IWA Hearing will be entered into the record of the Planning and Zoning Commission Public Hearing.

Members raised concerns regarding: the yield plan; height of retaining wall on the east side of a portion of the driveway to Lots 1 and 2 off of Gurleyville Road; and if a guardrail might be necessary. Members also questioned the grade levels for the driveway leading to Lot 4, and the grade difference between the road surface and the tops of the banks on each side of the driveway, which appear to create a cavernous effect for some distance. The need for snow shelves was also mentioned.

C. Gottman, 580 Gurleyville Road, questioned if any consideration had been given for the removal of snow on the common driveway for Lots 2 &3.

Noting no further questions or comments, Hall MOVED, Holt seconded, to continue the public hearing until 7/5/11. MOTION PASED UNANIMOUSLY. Bonoff stated that on behalf of Mr. Plimpton, he grants a 35-day extension and will request Mr. Plimpton to do so in writing as soon as possible.

Old Business:

1. **Special Permit Application, Proposed Veterinary Hospital, 266 Stafford Rd, W. Ernst-applicant/ Y. Desiato-owner, PZC File #1300 (M.A.D. 7/20/11)**

   Hall **MOVED,** Holt seconded, to approve with conditions the special permit application (File #1300) of Wendy Ernst for a veterinary hospital at 266 Stafford Road, as described in a statement of use, as shown on site plans dated March 17, 2011 as prepared by Datum Engineering and Surveying, LLC, an undated floor plan, a building elevation plan dated 4/9/11, as prepared by Pelletier Builders, Inc., and as presented at a Public Hearing on 5/16/11. This approval is granted because the application as approved is considered to be in compliance with Article V, Section B and other provisions of the Mansfield Zoning Regulations, and is granted with the following conditions:

   1. This approval authorizes the proposed veterinary hospital and related site work. It does not approve a boarding kennel. Any significant change in the use or site improvements as described in application submissions and at the Public Hearing shall require further PZC review and approval. Any questions regarding what constitutes a significant change shall be reviewed with the Zoning Agent and, as deemed necessary, the PZC.

   2. No driveway work within the Route 32 right-of-way shall begin until an encroachment permit is issued by the State Department of Transportation.

   3. No Zoning Permit shall be issued until a landscape management plan that addresses the requirements of Article VI, Section B.4.m.6 is submitted and approved by the Director of Planning and Development.

   4. Final plans, which shall be signed and sealed by all responsible professionals, shall be revised to include: A) The proposed trees north of the fenced outside keeping areas, and, B) Six (6) foot high fencing to screen the dumpster area.

   5. Unless included with final site plans, new signage and lighting improvements shall require subsequent Zoning Permit approval and compliance with all applicable Zoning Regulations. All lighting shall be downward directed and be the minimum necessary to address safety and security needs.

   6. If the currently proposed seven (7) parking spaces is subsequently determined to be inadequate by the Zoning Agent, the applicant shall construct the four spaces designated "proposed future parking" on the map. If additional spaces subsequently are determined by the Zoning Agent to be needed, the applicant shall add more parking on site.

   7. An additional accessible parking space shall be added if the one planned accessible space is determined by the Zoning Agent to be inadequate for staff and customer needs.

   8. If noise issues arise, the Commission reserves the right to impose conditions regarding the use of all outside areas used in association with the approved veterinary hospital.

   9. This permit shall not become valid until the applicant obtains the special permit form from the Planning Office and files it on the Land Records.

   MOTION PASSED UNANIMOUSLY.

2. **4//14/11 Draft revisions to the Zoning Regulations Re: Agricultural Uses, PZC File #907-36**
   Padick summarized the 6/2/11 draft and noted that because he and the Town Attorney felt there were no significant changes, no new public hearing is needed. Goodwin felt the setbacks are too restrictive. Beal volunteered to work with staff on a motion.
3. **3/30/11 Draft revisions to numerous sections of the Zoning Regulations, PZC File #907-35**
   Padick summarized the 6/2/11 draft and noted that he and the Town Attorney determined that the minor changes did not necessitate presenting them at a new public hearing. The consensus of the Commission was to accept the minor changes to the draft, and Beal volunteered to work with staff on a motion.
4. **Approval Request: Revised Plans for exhibit building Paideia Greek Theater Project, 28 Dog Lane, File #1049-7**
   Padick distributed revised plans and copies of previously approved plans for comparison. Padick noted that copies have been sent to neighbors notifying them of discussion at the 6/20/11 meeting.
5. **Request to stop collecting bond escrow funds for Freedom Green Phase 4C, File # 636-4**
   Tabled-awaiting information from applicant.
6. **Request to review and revise Plan of Conservation and Development regarding Hunting Lodge Road area**
   Beal MOVED, Hall seconded, to support the recommendation of the Regulatory Review Committee and therefore not consider further the March 16, 2011 request to revise Mansfield's Plan of Conservation and Development regarding the medium to high density residential classification in the Hunting Lodge Road area. The considerations and reasons, cited in the attached May 26, 2011 report from the Chairman of the Regulatory Review Committee, are supported by the Commission.

   Furthermore, the Director of Planning and Development is requested to propose processing guidelines, a fee schedule and application submission requirements that will formalize the process for submitting and acting upon requests to revise the Plan of Conservation and Development. MOTION PASSED UNANIMOUSLY.

Reports from Officers and Committees:
Chairman Favretti reminded members of the Field Trip on Wednesday, June 15, 2011 at 1:00 p.m.

Communications:
Communications listed on the agenda were noted.

Adjournment:
Chairman Favretti declared the meeting adjourned at 9:47 p.m.

Respectfully submitted,

Katherine Holt, Secretary

MINUTES
MANSFIELD PLANNING AND ZONING COMMISSION
Regular Meeting
Monday, June 20, 2011
Council Chamber, Audrey P. Beck Municipal Building

Members present:	R. Favretti (Chairman), M. Beal, J. Goodwin, R. Hall, K. Holt, G. Lewis, P. Plante, B. Pociask, B. Ryan
Alternates present:	F. Loxsom, K. Rawn
Alternates absent:	V. Ward
Staff Present:	Linda M. Painter, Director of Planning and Development, Curt Hirsch, Zoning Agent

Chairman Favretti called the meeting to order at 7:00 p.m.

Minutes:

06-06-11- Hall MOVED, Ryan seconded, to approve the 6/6/11 minutes as written. MOTION PASSED with all in favor except Pociask who disqualified himself. Lewis and Plante noted that they listened to the recording of the meeting.

06-15-11 Field Trip- Holt MOVED, Beal seconded to approve the 6/15/11 minutes with corrections to the members in attendance and St. Martin as an applicant, not an owner. MOTION PASSED with Favretti, Beal, Goodwin, Holt, Rawn and Ryan in favor and all others disqualified.

Zoning Agent's Report:

Noted. Hirsch related that the Altnaveigh owners, who live on the second floor of the building, will be hosting a wedding for their son. The Inn will be closed to guests and the wedding will include a large tent, band and invited guests. He noted that they do not have a Live Music permit for the restaurant/inn, but because this is also their residence they are allowed to have a private function on their property that includes music.

Old Business:

1. **Application to amend the Zoning Regulation to add Place of Assembly-Banquet Hall as a permitted use in the Neighborhood Business 2 Zone, M. Healy, applicant, PZC File #1301**

   After a brief discussion, with consensus of members in favor of the proposal, Favretti distributed an approval motion for members to consider.

   Hall MOVED, Holt seconded, to approve the application of Michael Healey, (File #1301), to amend Article VII, Section S.2 of the Zoning Regulations to add as a new permitted use in the Neighborhood Business-2 (NB-2) zone "Places of Assembly-Banquet Hall" as submitted to the Commission and heard at a Public Hearing on June 6, 2011. A copy of the subject regulation shall be attached to the Minutes of this meeting, and this amendment shall be effective as of July 15, 2011. Reasons for approval include:

   1. The revision is considered acceptably worded and suitably coordinated with related zoning provisions.
   2. The subject NB-2 zone contains few parcels that are considered potential sites for a Places of Assembly-Banquet Hall Use. Mansfield's Special Permit approval process and special NB-2 requirements will ensure that potential land use impacts will be addressed.
   3. The revision is considered to be consistent with Plan of Conservation & Development goals and objectives and the provisions of Article I of the Zoning Regulations. The revision could promote economic development in one of the Town's limited "Planned Development Areas"

   MOTION PASSED with all in favor except Pociask who abstained.

Continued Public Hearing:
Gravel Permit Renewals: Banis property on Pleasant Valley Road File #1164; Hall property on Old Mansfield Hollow Road File #910-2; Green Property, 1090 Stafford Road PZC File #1258
Chairman Favretti opened the continued Public Hearing at 7:22 p.m. Members present were Favretti, Beal, Goodwin, Hall, Holt, Lewis, Plante, Pociask, Ryan and alternates Loxsom and Rawn. Linda M. Painter, Director of Planning and Development, noted a 6/15/11 memo from C. Hirsch, Zoning Agent and a 6/15/11 memo from the G. Meitzler, Assistant Town Engineer.

Banis property on Pleasant Valley Road File #1164
S. Banis reiterated that he does not quarry stone on Sundays, but does farm on that day. He feels this could be what the neighbors are hearing and complaining about. He noted that he had done very little quarrying this past year.

Hall property on Old Mansfield Hollow Road File #910-2
E. Hall had nothing new to add.

Green Property, 1090 Stafford Road PZC File #1258
Hirsch noted that due to lack of activity, he advised the applicants that he didn't think any issues or questions would be raised, thus there was no need for them to be present at the hearing.

Favretti noted that there were no further questions or comments from the public or Commission. Holt MOVED, Hall seconded, to close the Public Hearing at 7:35 p.m. MOTION PASSED UNANIMOUSLY.

Holt MOVED, Hall seconded, to extend the permits of Hall, Banis and Green with all existing conditions intact until July 19, 2011. MOTION PASSED UNANIMOUSLY.

Holt agreed to work with staff on motions.

Approval Request: Revised Plans for exhibit building Paideia Greek Theater Project, 28 Dog Lane, File #1049-7
Pociask disqualified himself and Favretti appointed Loxsom to act in his place.
Linda M. Painter, Director of Planning and Development, reviewed her 6/16/11 report and a 6/15/11 report from F. Raiola, Deputy Fire Marshal.

E. Tomazos stated that he will work with Mansfield's Building Office and Fire Marshal to develop plans for the stairway to the plaza. He noted that part of this landscape plan is to enhance and repair the stonewall along Dog Lane.

John Alexopoulos, landscape architect, reviewed the landscape plan and noted the majority of the plantings will be done in the fall to ensure plant survival, but building and seeding of the mound will begin soon.

Members expressed confusion over the submitted plans. Members agreed that they did not want to hold up work on the landscaping any longer, but that clearer plans need to be submitted for approval of the modification request.

Plante MOVED, Hall seconded, that the PZC allow landscaping work to go forward and that it be noted that approval at this time is only for landscaping and that the stop-work order on the project is still in effect for structural work until the PZC receives and approves more complete plans for the exhibit area and plaza. MOTION PASSED with all in favor except Pociask who had disqualified himself.

Peter Millman, Dog Lane, stated that he is pleased that the PZC allowed the landscaping portion of this project to move forward, noting that it will be much more pleasing aesthetically for neighbors. He questioned Tomazos if the stonewall can be re-built to give a uniform width to the adjacent sidewalk.

Old Business:

2. **4/14/11 Draft revisions to the Zoning Regulations Re: Agricultural Uses, PZC File #907-36**

Beal MOVED, Holt seconded, to approve, effective July 15, 2011, revisions to: Article IV, Section B; Article VII, Section G; Article VIII, Section B; Article X, Section C; and Article X (addition of a new sub-section T) regarding agricultural uses. The approved revisions reorganize, clarify and incorporate new standards (particularly for the keeping of animals) for agricultural uses in Mansfield.

The subject Zoning Regulation revisions, which are attached, were presented as 4/14/11 drafts at a May 16, 2011 Public Hearing and subsequently revised as a June 9, 2011 draft to address comments received at the Public Hearing.

In approving these Zoning Regulation revisions, the Planning and Zoning Commission has reviewed and considered all Public Hearing testimony and communications including reports from the WINCOG Regional Planning Commission, Mansfield's Director of Planning, Mansfield's Agriculture Committee and the Mansfield Town Attorney. The regulation amendments referenced above are adopted pursuant to the provisions and authority contained in Chapter 124 of the Connecticut General Statutes, including Section 8-2, which grants the Commission the following:

- the authority to regulate the location and use of buildings, structures and land for trade, industry, residence or other purposes;
- the authority to regulate the erection, construction, reconstruction or alteration of buildings and structures;
- the mandate to consider the Plan of Conservation and Development prepared under Section 8-23;
- the mandate to promote health and the general welfare and to facilitate adequate provisions for water, sewerage and other public requirements;
- the mandate to give reasonable consideration as to the character of the district and its peculiar suitability for particular uses and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout such municipality;
- the authority that reasonable consideration be given for the protection of potential public surface and ground drinking water supplies;

The subject regulation revisions have been adopted because they promote most if not all of these statutory goals. Furthermore, the Commission has adopted the subject regulation revisions for the following reasons:

1. The subject regulation revisions help implement goals, objectives and recommendations contained in Mansfield's 2006 Plan of Conservation and Development and are fully consistent with recommendations contained in State and Regional land use plans.
2. The subject regulation revisions promote goals and objectives contained in Article I of the Zoning Regulations and are consistent with the approval considerations contained in Article XIII Section D of the Zoning Regulations.
3. The revisions are acceptably worded and suitably coordinated with related Zoning provisions. The proposed wording has been found legally acceptable to the Town Attorney.
4. The revisions clarify and strengthen existing policies regarding the protection of surface and ground water, inland wetlands and other environmental resources.
5. The revisions promote agricultural uses while providing appropriate standards and permit processes to address potential environmental impact, neighborhood impact and animal welfare issues.

MOTION PASSED with all in favor except Pociask who abstained and Goodwin who was opposed.

3. **3/30/11 Draft revisions to numerous sections of the Zoning Regulations, PZC File #907-35**
Beal MOVED, Plante seconded, to approve, effective July 15, 2011, revisions to:

A. Article VII, Section N and Article X, Section A, to incorporate new design criteria for the Planned Business 3 Zone (Four Corners Area).
B. Article V, Section A; Article VIII, Section A; Article X, Section J and R; and Article XI, Section C to incorporate revised application and approval criteria to protect historic resources and new zoning permit, site plan and special permit approval criteria for exterior construction in designated historic village areas.
C. Article V, Sections A and B and Article X, Section R to incorporate revisions to existing Architectural and Design Standards.
D. Article VIII, Section A to incorporate new setback provisions for outdoor recreational facilities.
E. Article V, Section A incorporate revised site plan and special permit standards for lighting improvements.
F. Article V, Section A incorporate revised provisions for sidewalk, bikeway, trail and other pedestrian and bicycle improvements.
G. Article V, Section A incorporate revised notice provisions and revised standards for refuse area.

The subject Zoning Regulation revisions, which are attached, were presented as 3/30/11 drafts at a May 16, 2011 Public Hearing and subsequently revised as a June 9, 2011 draft to address issues raised during the hearing and post hearing review process.

In approving these Zoning Regulation revisions, the Planning and Zoning Commission has reviewed and considered all Public Hearing testimony and communications including reports from the WINCOG Regional Planning Commission, Mansfield's Director of Planning and the Mansfield Town Attorney. The regulation amendments referenced above are adopted pursuant to the provisions and authority contained in Chapters 124 of the Connecticut General Statutes, including Section 8-2, which grants the Commission the following:

- the authority to regulate the location and use of buildings, structures and land for trade, industry, residence or other purposes;
- the authority to regulate the erection, construction, reconstruction or alteration of buildings and structures;
- the mandate to consider the Plan of Conservation and Development prepared under Section 8-23;
- the mandate to promote health and the general welfare and to facilitate the adequate provision for water, sewerage and other public requirements;
- the mandate to give reasonable consideration as to the character of the district and its peculiar suitability for particular uses and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout such municipality;
- the authority to encourage energy-efficient patterns of development;

The subject regulation revisions have been adopted because they promote most if not all of these statutory goals. Furthermore, the Commission has adopted the subject regulation revisions for the following reasons:

1. The subject regulation revisions help implement goals, objectives and recommendations contained in Mansfield's 2006 Plan of Conservation and Development and are fully consistent with recommendations contained in State and Regional land use plans.
2. The subject regulation revisions promote goals and objectives contained in Article I of the Zoning Regulations and are consistent with the approval considerations contained in Article XIII Section D of the Zoning Regulations.
3. The revisions are acceptably worded and suitably coordinated with related Zoning provisions. The proposed wording has been found legally acceptable to the Town Attorney

4. The revisions incorporate a new intent section and design standards to promote the coordinated development of the Four Corners Area of Mansfield.
5. The revisions clarify and strengthen existing and incorporate new submission requirements and approval criteria regarding the protection of historic features and historic village areas.
6. The revisions refine and expand architectural and design standards, particularly regarding vehicular and pedestrian traffic, public transit, building designs, building materials and accessory improvements.
7. The revisions incorporate new setback requirements for outdoor recreational improvements to help reduce potential neighborhood impact.
8. The revisions incorporate new lighting provisions to help reduce neighborhood impacts and promote efficient energy use.
9. The revisions incorporate new provisions to help encourage pedestrian and bicycle use.

MOTION PASSED with all in favor except Pociask who abstained.

4. **4-Lot Subdivision Application, (3 New Lots) Wormwood Hill & Gurleyville Roads, S. Plimpton o/a, PZC File #1298**
Tabled pending 7/5/11 continued Public Hearing.

5. **Request to stop collecting bond escrow funds for Freedom Green Phase 4C, PZC File # 636-4**
Tabled-awaiting information from applicant.

New Business:

1. **New Special Permit, Restaurant Use, 82-86 Storrs Rd, College Mart o/a, PZC File #483-5**
Goodwin MOVED, Plante seconded, to receive the Special Permit application (File #483-5) submitted by U.S. Properties, Inc., for a restaurant use, on property located at 82-86 Storrs Road, owned by College Mart & U.S. Properties, Inc., as shown on plans dated 3/10/11, and as described in other application submissions, and to refer said application to the staff for review and comments, and to set a Public Hearing for July 18, 2011. MOTION PASSED UNANIMOUSLY.
2. **Consideration of Appointing Director of Planning and Development as Deputy Zoning Agent**
Holt MOVED, Plante seconded, that the Planning and Zoning Commission appoint Linda M. Painter, Director of Planning and Development as the duly authorized Deputy Zoning Agent. MOTION PASSED UNANIMOUSLY.

Reports from Officers and Committees:
None noted.

Communications:
Communications listed on the agenda were noted.

Adjournment:
Chairman Favretti declared the meeting adjourned at 8:36 p.m.

Respectfully submitted,

Katherine Holt, Secretary

PAGE
BREAK

DRAFT MINUTES
MANSFIELD PLANNING AND ZONING COMMISSION
Regular Meeting
Tuesday, July 5, 2011
Council Chamber, Audrey P. Beck Municipal Building

Members present:	R. Favretti (Chairman), M. Beal, K. Holt, G. Lewis, P. Plante, B. Pociask,
Members absent:	J. Goodwin, R. Hall, B. Ryan
Alternates present:	K. Rawn, V. Ward
Alternates absent:	F. Loxsom
Staff Present:	Linda M. Painter, Director of Planning and Development

Chairman Favretti called the meeting to order at 8:00 p.m. He appointed alternates Ward and Rawn to act in members' absence.

Minutes:
06-20-11- Plante MOVED, Pociask seconded, to approve the 6/20/11 minutes as written. MOTION PASSED UNANIMOUSLY. Ward noted that she listened to the recording of the meeting.

Zoning Agent's Report:
Noted.

Continued Public Hearing:
4-Lot Subdivision Application, (3 New Lots) Wormwood Hill & Gurleyville Roads, S. Plimpton o/a, PZC File #1298
Chairman Favretti opened the continued Public Hearing at 8:04 p.m. Pociask disqualified himself. Members present were Favretti, Beal, Holt, Lewis, Plante, and alternates Rawn and Ward, both appointed to act. Painter noted in addition to revised plans dated 6/20/11, the following communications were received and distributed to the Commission: a 6/7/11 letter from S. Plimpton granting an extension; a 6/7/11 letter from Mr. & Mrs. Potz; a 6/29/11 report from the Wetlands Agent/Assistant Town Engineer; and a 6/30/11 report from Linda M. Painter, Director of Planning and Development.

Douglas Bonoff, land surveyor; Paul Biscuti, engineer; and Scott Plimpton, applicant, were present.

Douglas Bonoff agreed to have the testimony of the Public Hearing at the Inland Wetlands Agency public hearing entered into the record of the Planning and Zoning Commission Public Hearing.

Paul Biscuti reviewed the changes made to the 6/20/11 plans based on comments and recommendations from the staff, Commission and the public. He referenced the BAE and DAE changes on Lot 3 that now will be defined by stone walls.

Holt requested verification that the open space dedication is acceptable to staff and questioned the wording of the easements. Holt also expressed concern for the amount of water being channeled down the driveway and into Wormwood Hill Road from Lot 4. It was confirmed that the catch basins are standard size and that the width of the driveway is 16 feet and will be paved for 300 feet on the steepest slope. The applicant agreed to have draft easement language on the plan for the next meeting
Rawn asked Biscuti to indicate the drainage location on the Gottman property from Driveway A.

Cliff Gottman expressed concern with the driveway being closer to his property and its effects on drainage to his land. He was told the change in location was only due to lessen the cost to the applicant and not to improve drainage.

Favretti expressed concern that about one third of the stone walls are being disturbed. He requested notations on the plans as to where these walls will be relocated. Biscuti agreed to depict the relocated stone walls on a revised set of plans.

Plante MOVED, Holt seconded, to continue the Public Hearing to the 7/18/11 meeting. MOTION PASSED with all in favor except Pociask who had disqualified himself.

Old Business:

1. **Gravel Permit Renewals: Banis property on Pleasant Valley Road File #1164; Hall property on Old Mansfield Hollow Road File #910-2; Green Property, 1090 Stafford Road PZC File #1258**

Banis property on Pleasant Valley Road File #1164

Holt moved, Plante seconded, to approve with conditions the special permit renewal application (file 1164) of Steven D. Banis for the removal of approximately 7,500 cubic yards of excess material from Area #3 to be used for agricultural purposes on property located at Pleasant Valley Farm, Pleasant Valley Road, in an RAR-90 zone, as submitted to the Commission and shown on plans dated 6/1/05 revised through 5/5/11, accompanied by a 4/8/11 and a 6/14/11 letter, and as presented at Public Hearings on 6/6/11 and 6/20/11. This approval is granted because the application as hereby approved is considered to be in compliance with Article X, Section H, Article V, Section B, and other provisions of the Mansfield Zoning Regulations, and is granted subject to the following conditions:

1. The applicant shall implement the suggestions and recommendations for soil and erosion control contained in a 7/12/00 letter from David Askew, District Manager of the Tolland County Soil and Water Conservation District, Inc. This work includes the stabilization of areas adjacent to watercourses, the stabilization of the largest intermittent stream channel, the phasing of land-disturbing activity to minimize periods of soil exposure and the revegetation of disturbed areas.
2. No blasting or excavation work shall take place within fifty feet of a property line. Particular care shall be taken in meeting this requirement adjacent to the Wadsworth property.
3. All work shall be conducted between 7 a.m. and 7 p.m. Monday through Friday and between 9 a.m. and 7 p.m. Saturday. There shall be no blasting, excavation, loading of trucks or other work related to the Special Permit on Sundays.
4. All blasting work shall be subject to the permitting process administered by the office of the Fire Marshal. The applicant's blasting agent shall notify the Windham Airport prior to blasting activity pursuant to a schedule to be agreed upon by the blasting agent, Mansfield's Fire Marshal and the Windham Airport manager. In addition, the applicant shall place a temporary sign along Pleasant Valley Road at least twelve (12) hours prior to blasting activity. The sign shall note the anticipated period of blasting.
5. Based on the applicant's submissions, all material removed from site is to be trucked out of Mansfield. All trucks hauling material offsite shall use Pleasant Valley Road to Route 32 to Route 6, and all loads shall be covered during transit.
6. The site shall be maintained as follows:
   A. There shall be no rock-processing equipment onsite;
   B. There shall be no rock or stump burial onsite;
   C. Onsite stockpiling shall be kept to a minimum to help prevent safety problems;
   D. No topsoil shall be removed from the site;
   E. The applicant shall submit bi-weekly erosion and sedimentation monitoring reports to the Zoning Agent until disturbed areas are revegetated;
7. Subject to compliance with all conditions, this permit shall be in effect until July 1, 2012;
8. This permit shall not become valid until the applicant obtains the permit form from the Planning Office and files it on the Land Records.

MOTION PASSED with all in favor except Rawn who abstained.

Hall property on Old Mansfield Hollow Road File #910-2

Holt MOVED, Rawn seconded, to approve with conditions the special permit renewal application of Edward C. Hall (file 910-2) for excavating and grading on property owned by the applicant, located off Bassetts Bridge Road, as submitted to the Commission and shown on a plan dated 5/28/11, and as presented at Public Hearings on 6/6/11 and 6/20/11. This renewal is granted because the application as hereby approved is considered to be in compliance with Article V, Section B and Article X, Section H of the Mansfield Zoning Regulations. Approval is granted with the following conditions, which must be strictly adhered to, due to potential adverse neighborhood impacts. Any violation of these conditions or the Zoning Regulations may provide basis for revocation or non-renewal of this special permit.

1. No activity shall take place until this renewal of special permit is filed on the Mansfield Land Records by the applicant. This approval for special permit renewal shall apply only to the authorized Phase I area of the site as modified by this approval which allows a northerly expansion of Phase 1.
2. This special permit renewal shall be effective until July 1, 2012;
3. Excavation activity shall take place only in accordance with plans dated 5/22/92, as revised to 5/28/11;
4. This permit renewal acknowledges that up to 500 cubic yards of clean topsoil may be brought onto the Phase 1 premises. Prior to depositing any topsoil/fill, the applicant shall contact the Assistant Town Engineer and identify the source of the topsoil material. The Assistant Town Engineer shall make a determination about the suitability of the material source and may require that it be tested for contamination. Only clean topsoil shall be brought in, and it shall be spread or stockpiled solely within the Phase 1 area.
5. All work shall be performed by Edward C. Hall or his employees. No other subcontractors or excavators shall excavate in or haul from this site. All work shall be performed using the equipment stated on said plans and in the applicant's Statement of Use;
6. No more than 8,000 cubic yards of sand and gravel or the amount of material remaining in Phase I, whichever is less, shall be removed per year;
7. In association with any request for permit renewal, the following information shall be submitted to the Commission at least one month prior to the permit expiration date:
   A. Updated mapping, prepared by a licensed professional engineer, depicting current contour elevations and the status of site conditions, including areas that have been revegetated;
   B. A status report statement that includes information regarding:
      - the amount of material removed in the current permit year and the estimated remaining material to be removed in the approved phase;
      - the planned timetable for future removal and restoration activity;
      - conformance or lack thereof with the specific approval conditions contained in this renewal motion.
8. This permit renewal denies the applicant's request to remove permit restrictions in the area depicted as "C" on the approved plan. These restrictions shall not be removed until completed areas of Phase 1 are graded and stabilized per the 5/22/92 Land Reclamation Plan. The existing area to the south and southeast of the approved excavation phase shall be retained in its existing wooded state. This area provides a buffer between the subject excavation activity and neighboring residential uses and is deemed necessary to address neighborhood impact requirements. The buffer shall extend southerly from the approved Phase I area to the Stadler-McCarthy property and shall extend southeasterly along the Gray and Dyjak properties to Mansfield Hollow Road Extension. The southeasterly extension shall have a minimum width of 50 feet (see Article X, Section H.5.e);
9. Topsoil:
   A. A minimum of 4" of topsoil shall be spread, seeded and stabilized over areas where excavation has been completed;

B. No loam shall be removed from the property. All stockpiled loam presently on the site shall be used for restoration of the area where gravel is removed.

10. In order to ensure that dust does not leave the site, erosion and sedimentation controls and site restoration provisions as detailed in the plans shall be strictly adhered to and the following measures shall be implemented:
    A. No more than 1.5 acres shall be exposed at any one time;
    B. Both roads shall be kept dust-free and maintained to trap fine material and to keep the gravel surface of the road clean. A tracking pad at least 50' in length shall be installed and maintained at the haul road exit on Bassetts Bridge Road;
    C. If the above measures do not control dust on the site as evidenced by complaints from nearby residents and verification by the Zoning Agent, dust monitors shall be installed immediately, with the advice of the applicant's engineer, and with their operation approved by the PZC;
    D. The haul road shall be watered as necessary to prevent dust;
    E. All loads shall be covered at the loading location;
    F. There shall be no stockpiles of any material other than topsoil located outside the excavation area. Any stockpiles will be only as part of the daily operation of the excavation and shall not exceed 10 cubic yards in size. All stockpiled material shall be graded off and stored within the lower portions of the site in order to minimize any windblown transport.

11. In order to ensure that there is no damage to the major aquifer underlying the subject property and nearby wells, the following shall be complied with:
    A. Excavation shall not take place within 4 feet of the water table;
    B. Materials stored onsite shall be limited to those directly connected with the subject excavation operation or an agricultural or accessory use authorized by the Zoning Regulations. Any burial of stumps obtained from the permit premises shall be in conformance with the DEP's regulations;
    C. With the exception of manure, which shall be spread in accordance with the letter received at the 4/6/94 PZC meeting from Joyce Meader of the Cooperative Extension Service, no pesticides or fertilizers shall be applied unless a specific application plan is approved by the PZC. All operations to restore the subject site shall employ Best Management Practices as recommended by the Natural Resources Conservation Service and State Department of Environmental Protection for the application of manure, fertilizers or pesticides and the management of animal wastes;
    D. No refueling, maintenance or storage of equipment shall be done onsite, in order to minimize the potential for damage from accidental spills;

12. In addition to Old Mansfield Hollow Rd, this permit renewal authorizes the use of a new haul road to Bassetts Bridge Road shown as "D" on the approved plan;

13. All zoning performance standards shall be strictly adhered to;

14. Approval of this permit does not imply approval of any future phase;

15. The existing cash bond plus accumulated interest shall remain in place until the activity has ceased and the area has been stabilized and restored to the satisfaction of the PZC;

16. Hauling operations and use of site excavation equipment shall be limited to the hours of 8:00 a.m. to 5:30 p.m. Mon.-Fri., and 8:00 a.m. to 1:00 p.m. on Saturday, with no hours of operation on Sunday;

17. The Planning and Zoning Commission waives the requirement of a map submission as per Condition #7A, but reserves the right to require it again if the conditions warrant;

18. This special permit shall become valid only after it is obtained by the applicant from the Mansfield Planning Office and filed by him upon the Mansfield Land Records.

MOTION PASSED with all in favor except Plante who was opposed.

Green property, 1090 Stafford Road PZC File #1258

Holt MOVED, Pociask seconded, to approve with conditions the application of K. Green (File # 1258) for a special permit renewal for gravel removal activity at 1090 Stafford Road. The approved area for new excavation is shown on maps dated 7/2/09 and authorized work is described in a 6/15/09 letter from the applicant, other application submissions, and testimony at Public Hearings on 6/6/11 and 6/20/11. This approval is granted because the application as hereby approved is considered to be in compliance with Article V, Section B and Article X, Section H of the Mansfield Zoning Regulations, and is granted with the following conditions:

1. All disturbed areas shall be covered with a minimum of 4 inches of topsoil and revegetated as per regulatory requirements and application submissions. No topsoil shall be removed from site without prior authorization.
2. The haul route indicated on the 7/2/09 plans and approved by the Assistant Town Engineer shall be utilized. An anti-tracking pad shall be installed at the Route 32 intersection of the haul route.
3. Erosion and sedimentation controls shall be installed where necessary as determined by the Assistant Town Engineer/Inland Wetland Agent. Particular attention shall be given to the area where a haul road culvert will be placed.
4. Due to the agricultural nature of the subject application, the distance of the site activity from wetland/watercourse areas and the adequacy of submitted plans, no site development bonding shall be required at this time. The PZC reserves the right to require bonding if site development problems arise.
5. This permit shall not become valid until the applicant obtains the permit form from the Planning Office and files it on the Land Records. If the subject excavation and site restoration work are not completed by 7/1/2012, renewal of this Special Permit shall be required.

MOTION PASSED UNANIMOUSLY.

2. **Special Permit, Restaurant Use, 82-86 Storrs Rd, College Mart o/a, PZC File #483-5**
   Tabled-pending 7/18/11 Public Hearing.
3. **Approval Request: Revised Plans for exhibit building Paideia Greek Theater Project, 28 Dog Lane, File #1049-7**
   Tabled-awaiting information from the applicant.
4. **Request to stop collecting bond escrow funds for Freedom Green Phase 4C, PZC File # 636-4**
   Tabled-awaiting information from the applicant.

New Business:

1. **New Special Permit Application for proposed office building, North Frontage Road, K. Tubridy owner, United Services applicant, PZC File #1302**
   Rawn MOVED, Holt seconded, to receive the Special Permit application (file # 1302) submitted by United Services for a proposed office building on property located on the north side of North Frontage Road owned by K. Tubridy as shown on plans dated 6-27-11 as shown and described in application submissions, and to refer said application to staff and committees, for review and comments and to set a Public Hearing for 8-1-11. MOTION PASSED UNANIMOUSLY.

2. **Zoning Permit Application for Storrs Center -Post Office Road, PZC File #1246-9**
   Linda M. Painter, Director of Planning and Development, summarized her 6/30/11 memo and noted that there will be a Downtown Partnership Public Hearing on July 12, 2011 at 7:00 p.m. in the Council Chambers of the Audrey P. Beck Building. Painter requested that any comments be submitted to her prior to the PZC's July 18th meeting in preparation for her recommendation.

3. **2011 Summer Vacation Schedule- Consideration of Cancelling August 15th meeting**
   Holt MOVED, Ward seconded, to cancel the August 15, 2011 meeting due to vacation schedules. MOTION PASSED UNANIMOUSLY.

Reports from Officers and Committees:
None noted.

Communications:
None noted.

Adjournment:
Chairman Favretti declared the meeting adjourned at 9:12 p.m.

Respectfully submitted,

Katherine Holt, Secretary

MINUTES
MANSFIELD INLAND WETLANDS AGENCY
Regular Meeting
Monday, June 6, 2011
Council Chambers, Audrey P. Beck Municipal Building

Members present:	R. Favretti (Chairman), M. Beal, J. Goodwin, R. Hall, K. Holt, B. Ryan
Members absent:	G. Lewis, P. Plante, B. Pociask
Alternates present:	F. Loxsom, K. Rawn, V. Ward
Staff present:	G. Meitzler (Wetlands Agent)

Chairman Favretti called the meeting to order at 7:00 p.m. He appointed alternates Ward, Rawn and Loxsom to act in members' absence.

Minutes:
5-2-11 – Hall MOVED, Ryan seconded, to approve the 5-2-11 minutes as written. MOTION PASSED with all in favor except Loxsom and Ward who disqualified themselves.

5-17-11 Field Trip- Ward MOVED, Goodwin seconded, to approve the 5-17-11 field trip minutes with the correction of members present. MOTION PASSED with Rawn, Goodwin, Favretti, Holt and Ward in favor and all others disqualified.

Communications:
The 5-17-11 Wetlands Agent's Monthly Business report and the 5-18-11 Conservation Commission Draft minutes were noted.

Old Business:
W1477 - Walker - Riverview Rd - Solar Energy Installation within 75' of river
Ryan disqualified herself. Holt MOVED, Ward seconded, to grant an Inland Wetlands License under the Wetlands and Watercourses Regulations of the Town of Mansfield to Harriet & Crayton Walker (file no. W1477), for installation of a photovoltaic system on property owned by the applicants located at 65 Riverview Road, as shown on a map dated 4/22/11, and as described in other application submissions.

This action is based on a finding of no anticipated significant impact on the wetlands, and is conditioned upon the following provision being met:
1. Appropriate erosion and sedimentation controls (as shown on the plans) shall be in place prior to construction, maintained during construction and removed when disturbed areas are completely stabilized.

This approval is valid for a period of five years (until June 6, 2016), unless additional time is requested by the applicant and granted by the Inland Wetlands Agency. The applicant shall notify the Wetlands Agent before any work begins, and all work shall be completed within one year. Any extension of the activity period shall come before this Agency for further review and comment. MOTION PASSED with all in favor except Ryan who disqualified herself.

New Business:
Algonquin Gas Line - Route 89 - installation of ground cable along pipeline
By consensus the Agency agreed to authorize the Chairman to send the applicant a letter stating the Agency has no objections to the cathodic protection work on Route 89.

W1479 - Bemont - Stafford Rd - garage building & small connector between existing buildings
Goodwin MOVED, Holt seconded, to receive the application submitted by Stephen H. Bemont (IWA File #1479) under the Wetlands and Watercourses Regulations of the Town of Mansfield for a living space addition/connection between the existing house and garage and a new garage, located at 787 Stafford Road, on

property owned by the applicant, as shown on a map dated 5/2/11 and as described in other application submissions, and to refer said application to the staff and Conservation Commission for review and comment. MOTION PASSED UNANIMOUSLY.

W1480 - St.Martin - Storrs Rd - new house, portions in 150' regulated area
Holt disqualified herself. Goodwin MOVED, Hall seconded, to receive the application the application submitted by William St. Martin (IWA File #1480) under the Wetlands and Watercourses Regulations of the Town of Mansfield for the construction of a single family residence, well, septic and associated site work, located on the west side of Storrs Road about 500 feet north of Dodd Road, on property owned by Barry & Dru Burnham, as shown on a map dated 5/11/11 and as described in other application submissions, and to refer said application to the staff and Conservation Commission for review and comment. MOTION PASSED with all in favor except Holt who disqualified herself.

Reports of Officers and Committees:
A field trip was scheduled for Wednesday, June 15, 2011 at 1:00 p.m.

Other Communications and Bills:
Noted.

Continued Public Hearing:
W1474 - Plimpton - Wormwood Hill/Gurleyville Rds - 4 lot subdivision
Chairman Favretti opened the continued Public Hearing at 7:16 p.m. Members present were Favretti, Beal, Goodwin, Hall, Holt, Ryan and alternates Loxsom, Rawn and Ward, who were all appointed to act. Meitzler noted in addition to revised plans dated 5/24/11, the following communications were received and distributed to the Commission: a 5/2/11 email from K. Kaminsky; a 5/3/11 letter with photos from C. Gottman; and 6/1/11 report from the Wetlands Agent.

Douglas Bonoff, Land Surveyor; Paul Biscutti, Engineer; and Kim Bradley, Ecologist, were present representing the applicant. Bonoff agreed that the testimony presented at the IWA hearing be entered into the record of the related Planning and Zoning Commission Public Hearing.

P. Biscutti reviewed the changes made to the plans based on previous public hearing comments and reports from staff and the public. He agrees with all recommendations in Meitzler and Padick's memos. He suggested that any remaining issues could be addressed in an approval motion.

C. Gottman, 580 Gurleyville Road, expressed continued concerns for run off from the driveway and the position of the driveway around the large rock.

The consensus of the Agency was that written assurance, from neighbor Potz, was necessary regarding permission for a drainage easement across that neighbor's property.

Noting no further questions or comments, Holt MOVED, Rawn seconded, to continue the public hearing until 7/5/11. MOTION PASSED UNANIMOUSLY. Bonoff stated that on behalf of Mr. Plimpton, he grants a 35-day extension and will request Mr. Plimpton to do so in writing as soon as possible.

Adjournment:
Favretti declared the meeting adjourned at 7:50 p.m.

Respectfully submitted,

Katherine Holt, Secretary

DRAFT MINUTES
MANSFIELD PLANNING AND ZONING COMMISSION
Regular Meeting
Tuesday, July 5, 2011
Council Chamber, Audrey P. Beck Municipal Building

Members present:	R. Favretti (Chairman), M. Beal, K. Holt, G. Lewis, P. Plante, B. Pociask,
Members absent:	J. Goodwin, R. Hall, B. Ryan
Alternates present:	K. Rawn, V. Ward
Alternates absent:	F. Loxsom
Staff Present:	Linda M. Painter, Director of Planning and Development

Chairman Favretti called the meeting to order at 8:00 p.m. He appointed alternates Ward and Rawn to act in members' absence.

Minutes:
06-20-11- Plante MOVED, Pociask seconded, to approve the 6/20/11 minutes as written. MOTION PASSED UNANIMOUSLY. Ward noted that she listened to the recording of the meeting.

Zoning Agent's Report:
Noted.

Continued Public Hearing:
4-Lot Subdivision Application, (3 New Lots) Wormwood Hill & Gurleyville Roads, S. Plimpton o/a, PZC File #1298
Chairman Favretti opened the continued Public Hearing at 8:04 p.m. Pociask disqualified himself. Members present were Favretti, Beal, Holt, Lewis, Plante, and alternates Rawn and Ward, both appointed to act. Painter noted in addition to revised plans dated 6/20/11, the following communications were received and distributed to the Commission: a 6/7/11 letter from S. Plimpton granting an extension; a 6/7/11 letter from Mr. & Mrs. Potz; a 6/29/11 report from the Wetlands Agent/Assistant Town Engineer; and a 6/30/11 report from Linda M. Painter, Director of Planning and Development.

Douglas Bonoff, land surveyor; Paul Biscuti, engineer; and Scott Plimpton, applicant, were present.

Douglas Bonoff agreed to have the testimony of the Public Hearing at the Inland Wetlands Agency public hearing entered into the record of the Planning and Zoning Commission Public Hearing.

Paul Biscuti reviewed the changes made to the 6/20/11 plans based on comments and recommendations from the staff, Commission and the public. He referenced the BAE and DAE changes on Lot 3 that now will be defined by stone walls.

Holt requested verification that the open space dedication is acceptable to staff and questioned the wording of the easements. Holt also expressed concern for the amount of water being channeled down the driveway and into Wormwood Hill Road from Lot 4. It was confirmed that the catch basins are standard size and that the width of the driveway is 16 feet and will be paved for 300 feet on the steepest slope. The applicant agreed to have draft easement language on the plan for the next meeting
Rawn asked Biscuti to indicate the drainage location on the Gottman property from Driveway A.

Cliff Gottman expressed concern with the driveway being closer to his property and its effects on drainage to his land. He was told the change in location was only due to lessen the cost to the applicant and not to improve drainage.

Favretti expressed concern that about one third of the stone walls are being disturbed. He requested notations on the plans as to where these walls will be relocated. Biscuti agreed to depict the relocated stone walls on a revised set of plans.

Plante MOVED, Holt seconded, to continue the Public Hearing to the 7/18/11 meeting. MOTION PASSED with all in favor except Pociask who had disqualified himself.

Old Business:

1. **Gravel Permit Renewals: Banis property on Pleasant Valley Road File #1164; Hall property on Old Mansfield Hollow Road File #910-2; Green Property, 1090 Stafford Road PZC File #1258**

Banis property on Pleasant Valley Road File #1164

Holt moved, Plante seconded, to approve with conditions the special permit renewal application (file 1164) of Steven D. Banis for the removal of approximately 7,500 cubic yards of excess material from Area #3 to be used for agricultural purposes on property located at Pleasant Valley Farm, Pleasant Valley Road, in an RAR-90 zone, as submitted to the Commission and shown on plans dated 6/1/05 revised through 5/5/11, accompanied by a 4/8/11 and a 6/14/11 letter, and as presented at Public Hearings on 6/6/11 and 6/20/11. This approval is granted because the application as hereby approved is considered to be in compliance with Article X, Section H, Article V, Section B, and other provisions of the Mansfield Zoning Regulations, and is granted subject to the following conditions:

1. The applicant shall implement the suggestions and recommendations for soil and erosion control contained in a 7/12/00 letter from David Askew, District Manager of the Tolland County Soil and Water Conservation District, Inc. This work includes the stabilization of areas adjacent to watercourses, the stabilization of the largest intermittent stream channel, the phasing of land-disturbing activity to minimize periods of soil exposure and the revegetation of disturbed areas.
2. No blasting or excavation work shall take place within fifty feet of a property line. Particular care shall be taken in meeting this requirement adjacent to the Wadsworth property.
3. All work shall be conducted between 7 a.m. and 7 p.m. Monday through Friday and between 9 a.m. and 7 p.m. Saturday. There shall be no blasting, excavation, loading of trucks or other work related to the Special Permit on Sundays.
4. All blasting work shall be subject to the permitting process administered by the office of the Fire Marshal. The applicant's blasting agent shall notify the Windham Airport prior to blasting activity pursuant to a schedule to be agreed upon by the blasting agent, Mansfield's Fire Marshal and the Windham Airport manager. In addition, the applicant shall place a temporary sign along Pleasant Valley Road at least twelve (12) hours prior to blasting activity. The sign shall note the anticipated period of blasting.
5. Based on the applicant's submissions, all material removed from site is to be trucked out of Mansfield. All trucks hauling material offsite shall use Pleasant Valley Road to Route 32 to Route 6, and all loads shall be covered during transit.
6. The site shall be maintained as follows:
   A. There shall be no rock-processing equipment onsite;
   B. There shall be no rock or stump burial onsite;
   C. Onsite stockpiling shall be kept to a minimum to help prevent safety problems;
   D. No topsoil shall be removed from the site;
   E. The applicant shall submit bi-weekly erosion and sedimentation monitoring reports to the Zoning Agent until disturbed areas are revegetated;
7. Subject to compliance with all conditions, this permit shall be in effect until July 1, 2012;
8. This permit shall not become valid until the applicant obtains the permit form from the Planning Office and files it on the Land Records.

MOTION PASSED with all in favor except Rawn who abstained.

Hall property on Old Mansfield Hollow Road File #910-2

Holt MOVED, Rawn seconded, to approve with conditions the special permit renewal application of Edward C. Hall (file 910-2) for excavating and grading on property owned by the applicant, located off Bassetts Bridge Road, as submitted to the Commission and shown on a plan dated 5/28/11, and as presented at Public Hearings on 6/6/11 and 6/20/11. This renewal is granted because the application as hereby approved is considered to be in compliance with Article V, Section B and Article X, Section H of the Mansfield Zoning Regulations. Approval is granted with the following conditions, which must be strictly adhered to, due to potential adverse neighborhood impacts. Any violation of these conditions or the Zoning Regulations may provide basis for revocation or non-renewal of this special permit.

1. No activity shall take place until this renewal of special permit is filed on the Mansfield Land Records by the applicant. This approval for special permit renewal shall apply only to the authorized Phase I area of the site as modified by this approval which allows a northerly expansion of Phase 1.
2. This special permit renewal shall be effective until July 1, 2012;
3. Excavation activity shall take place only in accordance with plans dated 5/22/92, as revised to 5/28/11;
4. This permit renewal acknowledges that up to 500 cubic yards of clean topsoil may be brought onto the Phase 1 premises. Prior to depositing any topsoil/fill, the applicant shall contact the Assistant Town Engineer and identify the source of the topsoil material. The Assistant Town Engineer shall make a determination about the suitability of the material source and may require that it be tested for contamination. Only clean topsoil shall be brought in, and it shall be spread or stockpiled solely within the Phase 1 area.
5. All work shall be performed by Edward C. Hall or his employees. No other subcontractors or excavators shall excavate in or haul from this site. All work shall be performed using the equipment stated on said plans and in the applicant's Statement of Use;
6. No more than 8,000 cubic yards of sand and gravel or the amount of material remaining in Phase I, whichever is less, shall be removed per year;
7. In association with any request for permit renewal, the following information shall be submitted to the Commission at least one month prior to the permit expiration date:
   A. Updated mapping, prepared by a licensed professional engineer, depicting current contour elevations and the status of site conditions, including areas that have been revegetated;
   B. A status report statement that includes information regarding:
      - the amount of material removed in the current permit year and the estimated remaining material to be removed in the approved phase;
      - the planned timetable for future removal and restoration activity;
      - conformance or lack thereof with the specific approval conditions contained in this renewal motion.
8. This permit renewal denies the applicant's request to remove permit restrictions in the area depicted as "C" on the approved plan. These restrictions shall not be removed until completed areas of Phase 1 are graded and stabilized per the 5/22/92 Land Reclamation Plan. The existing area to the south and southeast of the approved excavation phase shall be retained in its existing wooded state. This area provides a buffer between the subject excavation activity and neighboring residential uses and is deemed necessary to address neighborhood impact requirements. The buffer shall extend southerly from the approved Phase I area to the Stadler-McCarthy property and shall extend southeasterly along the Gray and Dyjak properties to Mansfield Hollow Road Extension. The southeasterly extension shall have a minimum width of 50 feet (see Article X, Section H.5.e);
9. Topsoil:
   A. A minimum of 4" of topsoil shall be spread, seeded and stabilized over areas where excavation has been completed;

B. No loam shall be removed from the property. All stockpiled loam presently on the site shall be used for restoration of the area where gravel is removed.

10. In order to ensure that dust does not leave the site, erosion and sedimentation controls and site restoration provisions as detailed in the plans shall be strictly adhered to and the following measures shall be implemented:
    A. No more than 1.5 acres shall be exposed at any one time;
    B. Both roads shall be kept dust-free and maintained to trap fine material and to keep the gravel surface of the road clean. A tracking pad at least 50' in length shall be installed and maintained at the haul road exit on Bassetts Bridge Road;
    C. If the above measures do not control dust on the site as evidenced by complaints from nearby residents and verification by the Zoning Agent, dust monitors shall be installed immediately, with the advice of the applicant's engineer, and with their operation approved by the PZC;
    D. The haul road shall be watered as necessary to prevent dust;
    E. All loads shall be covered at the loading location;
    F. There shall be no stockpiles of any material other than topsoil located outside the excavation area. Any stockpiles will be only as part of the daily operation of the excavation and shall not exceed 10 cubic yards in size. All stockpiled material shall be graded off and stored within the lower portions of the site in order to minimize any windblown transport.

11. In order to ensure that there is no damage to the major aquifer underlying the subject property and nearby wells, the following shall be complied with:
    A. Excavation shall not take place within 4 feet of the water table;
    B. Materials stored onsite shall be limited to those directly connected with the subject excavation operation or an agricultural or accessory use authorized by the Zoning Regulations. Any burial of stumps obtained from the permit premises shall be in conformance with the DEP's regulations;
    C. With the exception of manure, which shall be spread in accordance with the letter received at the 4/6/94 PZC meeting from Joyce Meader of the Cooperative Extension Service, no pesticides or fertilizers shall be applied unless a specific application plan is approved by the PZC. All operations to restore the subject site shall employ Best Management Practices as recommended by the Natural Resources Conservation Service and State Department of Environmental Protection for the application of manure, fertilizers or pesticides and the management of animal wastes;
    D. No refueling, maintenance or storage of equipment shall be done onsite, in order to minimize the potential for damage from accidental spills;

12. In addition to Old Mansfield Hollow Rd, this permit renewal authorizes the use of a new haul road to Bassetts Bridge Road shown as "D" on the approved plan;

13. All zoning performance standards shall be strictly adhered to;

14. Approval of this permit does not imply approval of any future phase;

15. The existing cash bond plus accumulated interest shall remain in place until the activity has ceased and the area has been stabilized and restored to the satisfaction of the PZC;

16. Hauling operations and use of site excavation equipment shall be limited to the hours of 8:00 a.m. to 5:30 p.m. Mon.-Fri., and 8:00 a.m. to 1:00 p.m. on Saturday, with no hours of operation on Sunday;

17. The Planning and Zoning Commission waives the requirement of a map submission as per Condition #7A, but reserves the right to require it again if the conditions warrant;

18. This special permit shall become valid only after it is obtained by the applicant from the Mansfield Planning Office and filed by him upon the Mansfield Land Records.

MOTION PASSED with all in favor except Plante who was opposed.

Green property, 1090 Stafford Road PZC File #1258

Holt MOVED, Pociask seconded, to approve with conditions the application of K. Green (File # 1258) for a special permit renewal for gravel removal activity at 1090 Stafford Road. The approved area for new excavation is shown on maps dated 7/2/09 and authorized work is described in a 6/15/09 letter from the applicant, other application submissions, and testimony at Public Hearings on 6/6/11 and 6/20/11. This approval is granted because the application as hereby approved is considered to be in compliance with Article V, Section B and Article X, Section H of the Mansfield Zoning Regulations, and is granted with the following conditions:

1. All disturbed areas shall be covered with a minimum of 4 inches of topsoil and revegetated as per regulatory requirements and application submissions. No topsoil shall be removed from site without prior authorization.
2. The haul route indicated on the 7/2/09 plans and approved by the Assistant Town Engineer shall be utilized. An anti-tracking pad shall be installed at the Route 32 intersection of the haul route.
3. Erosion and sedimentation controls shall be installed where necessary as determined by the Assistant Town Engineer/Inland Wetland Agent. Particular attention shall be given to the area where a haul road culvert will be placed.
4. Due to the agricultural nature of the subject application, the distance of the site activity from wetland/watercourse areas and the adequacy of submitted plans, no site development bonding shall be required at this time. The PZC reserves the right to require bonding if site development problems arise.
5. This permit shall not become valid until the applicant obtains the permit form from the Planning Office and files it on the Land Records. If the subject excavation and site restoration work are not completed by 7/1/2012, renewal of this Special Permit shall be required.

MOTION PASSED UNANIMOUSLY.

2. **Special Permit, Restaurant Use, 82-86 Storrs Rd, College Mart o/a, PZC File #483-5**
   Tabled-pending 7/18/11 Public Hearing.
3. **Approval Request: Revised Plans for exhibit building Paideia Greek Theater Project, 28 Dog Lane, File #1049-7**
   Tabled-awaiting information from the applicant.
4. **Request to stop collecting bond escrow funds for Freedom Green Phase 4C, PZC File # 636-4**
   Tabled-awaiting information from the applicant.

New Business:

1. **New Special Permit Application for proposed office building, North Frontage Road, K. Tubridy owner, United Services applicant, PZC File #1302**
   Rawn MOVED, Holt seconded, to receive the Special Permit application (file # 1302) submitted by United Services for a proposed office building on property located on the north side of North Frontage Road owned by K. Tubridy as shown on plans dated 6-27-11 as shown and described in application submissions, and to refer said application to staff and committees, for review and comments and to set a Public Hearing for 8-1-11. MOTION PASSED UNANIMOUSLY.

2. **Zoning Permit Application for Storrs Center -Post Office Road, PZC File #1246-9**
   Linda M. Painter, Director of Planning and Development, summarized her 6/30/11 memo and noted that there will be a Downtown Partnership Public Hearing on July 12, 2011 at 7:00 p.m. in the Council Chambers of the Audrey P. Beck Building. Painter requested that any comments be submitted to her prior to the PZC's July 18th meeting in preparation for her recommendation.

3. **2011 Summer Vacation Schedule- Consideration of Cancelling August 15th meeting**
   Holt MOVED, Ward seconded, to cancel the August 15, 2011 meeting due to vacation schedules. MOTION PASSED UNANIMOUSLY.

Reports from Officers and Committees:
None noted.

Communications:
None noted.

Adjournment:
Chairman Favretti declared the meeting adjourned at 9:12 p.m.

Respectfully submitted,

Katherine Holt, Secretary

Memorandum: June 29, 2011
To: Inland Wetland Agency
From: Grant Meitzler, Inland Wetland Agent
Re: Monthly Business

Informational;

There is a Zoning Application in progress for the Storrs Downtown Project work around the Storrs Post Office. There is a letter attached from BL Companies explaining that the proposed work has not changed from the October 2007 (W1378) Master Plan approval. This is till within the 5 year term for their permit and I have indicated they can proceed without a new application.

W1419 - Chernushek - hearing on Order

3.10.09: The hearing on the Order remains open and should continue until the permit application under consideration is acted upon.
(The Order was dropped on approval of the application required in the Order.)

4.30.09: Former rye grass seeding is beginning to show green. I spoke with Mr. Chernushek this afternoon who indicated health problems that delayed his starting but indicated he will be working this weekend. I will update on this Monday evening.

5.26.09: A light cover of grass growth has come in. Mr. Chernushek indicates health problems and two related deaths have delayed his start of work since the permit approval was granted. It appears that some light work has started. He has further indicated that he will start a vacation on June 22, 2009 to finish the work.

6.13.09: Work is underway.

6.21.09: Bulldozer work has been completed - finish work remains. The additional silt fencing has been placed along the northerly wetlands crossing, and the additional pipe under the southerly crossing has been installed. Remaining work includes finish grading along edges, spreading stockpiled topsoil, and establishing grass growth.

7.01.09: I spoke with Mr. Chernushek who indicated he expects work to be completed by September 1, 2009. (Site photo attached).

9.03.09: Mr. Chernushek has been working on levelling and grading. The formerly seeded areas have become fairly thick growth surrounding the central wet areas. He has further indicated that with the combination of weather and the slower moving of earth with the payloader compared to the earlier rented bulldozer has led him to contact contractors for earth moving estimates which have not yet been received. The site is not yet finished but has remained quite stable.

9.12.09: I met with Mr. Chernushek today and discussed again what his plans are for stabilizing this work site.

10.01.09: Mr. Chernushek indicated he has not heard back from the contractor he had spoken with about removing material, and is in progress of contacting others. In discussion is removal of material from the site either within the 100 cubic yard limit or obtaining a permit for such removal.

10.28.09: Mr. Chernushek has indicated he has made arrangements with DeSiato Sand & Gravel to remove 750 cubic yards of material.

Staff is in the process of clarifying permit requirements.

W1445 - Chernushek - application for gravel removal from site

11.30.09: Packet of information representing submissions by Mr. Chernushek, Mr. DeSiato and myself is in this agenda packet as Mr. Chernusheks's request for modification.

12.29.09: Preparation of required information for PZC special permit application is in progress. Tabling any action until the February 1, 2010 meeting is recommended.

1.12.10: 65 day extension of time received.

2.18.10: No new information has been received.

2.25.10: This application has been **withdrawn.**

6.30.10: As viewed from the adjacent property, the upstream and downstream areas have grown to a decent protected surface. I did not see indication of sediment movement.

10.26.10: A sale of the East portion of the Chernushek property has been in negotiation.

12.27.10: The property exchange has been completed. The owner is now the neighboring property owner Bernie Brodin. He has indicated his intention to stabilize the area as weather permits.

4.25.11: Mr. Brodin indicates he is starting with grading and spreading hay and seed to stabilize disturbed areas.

Mansfield Auto Parts - Route 32

2.18.10: Same - they are in the process of rebuilding the engine on the payloader.

3.30.10: Same - Mr. Bednarczyk indicates a contuing problem finding engine parts.

4.13.10: Owner indicates the payloader is operating again.

4.15.10: Owner indicates he will have the cars moved this week.

4.23.10: No vehicles are within 25' of wetlands.

5.17.10: Inspection - no vehicles are within 25' of wetlands.

6.02.10: Inspection - no vehicles are within 25' of wetlands.

6.23.10: Inspection - no vehicles are within 25' of wetlands.

7.15.10: Inspection - no vehicles are within 25' of wetlands.

9.01.10: Inspection - no vehicles are within 25' of wetlands. Mr. Bednarczyk has started removing tires from the westerly part of his site using roll-off containers. With this arrangement a moderately steady rate of removal of the tires should be possible to maintain until the tires are completely removed.

9.28.10: Inspection - no vehicles are within 25' of wetlands. Tire removal is continuing with 1 to 2 roll-off containers being removed per month.

10.07.10: Inspection - no vehicles are within 25' of wetlands. Tire removal has been continuing.

11.29.10: Inspection - no vehicles are within 25' of wetlands. Owner has been trucking cars for crushing with 6 tires per vehicle. He indicates 3 cars per day or 18 tires per day. The actual number is probably lower than 18.

12.23.10: Inspection - no vehicles are within 25' of wetlands.

1.07.11: Inspection - no vehicles are within 25' of wetlands.

1.20.11: Vehicle storage areas are snowed in and inaccessible.

1.26.11: Snows remain, although some clearing has been done I could not count on being able to get out.

2.24.11: Inspection - no vehicles are within 25' of wetlands.

3.09.11: Inspection - no vehicles are within 25' of wetlands.

3.22.11: Inspection - no vehicles are within 25' of wetlands.
4.25.11: Inspection - no vehicles are within 25' of wetlands.
5.17.11: Inspection - no vehicles are within 25' of wetlands.
Mr. Bednarczyk's estimate is that approximately 100 tires per month are being removed from the site.
6.14.11: Inspection - no vehicles are within 25' of wetlands.

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TOWN OF MANSFIELD
DEPARTMENT OF PLANNING AND DEVELOPMENT

LINDA M. PAINTER, AICP, DIRECTOR

Memo to: Mansfield Planning and Zoning Commission, Conservation Commission

From: Linda M. Painter, AICP, Director of Planning and Development

Date: **June 30, 2011**

Subject: Zoning Permit Review
Storrs Center: Post Office and Post Office Road
File 1246-9

In 2007, the Planning and Zoning Commission (PZC) unanimously approved the Storrs Center Special Design District (SC-SDD) zone and associated Zoning Regulations establishing a specific review and approval process for all development tin the SC-SDD. The approved zoning permit review and approval process is designed to ensure compliance with all applicable zoning approval criteria including a determination by the Director of Planning and Development that the proposed development is "reasonably consistent" with the PZC approved preliminary master plan mapping, the Storrs Center Design Guidelines, the master parking study, the master traffic study and the master drainage study. The Zoning Regulations define "reasonably consistent" as "some variation or deviation from specific provisions is acceptable, provided that the overall intent of the provision is achieved with respect to health, safety, environmental and other land use considerations."

Although the SC-SDD Zoning Permit review process is administrative, provisions are included for public participation. A public hearing conducted by the Mansfield Downtown Partnership, Inc., Mansfield's officially designated Municipal Development Authority for the Storrs Center project, is required, and all public comments will be considered before a decision is made on a zoning permit application. Furthermore, all zoning permits in the SC-SDD will be thoroughly reviewed by Mansfield staff members and it will be confirmed that submitted plans remain acceptable to the State and Federal review agencies, including the State Department of Environmental Protection, the State Traffic Commission and the Army Corp of Engineers.

A Zoning Permit Application for changes to the Post Office site and Post Office Road was submitted on June 23, 2011. The Downtown Partnership has scheduled a public hearing on this Zoning Permit application on July 12, 2011 at 7:00 p.m. in the Town Council Chambers at the Audrey P. Beck Municipal Building. Following completion of the public hearing process, the Downtown Partnership Inc., will forward comments and a recommendation for consideration by the Director of Planning and Development. This issue will be included on the PZC's July 18th agenda for review and potential comment. Any comments from the Conservation Commission should be agreed upon and/or authorized before July 12th.

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